LAND AND RESOURCE MANAGEMENT PLAN FOR THE DANIEL BOONE NATIONAL FOREST

United States
Department of
Agriculture

Forest Service

Southern Region

Daniel Boone
National Forest

Winchester, KY

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Rock Creek (of Big South Fork watershed) on the Stearns Ranger District.

Chapter 1

Mission of the Daniel Boone National Forest

The Daniel Boone National Forest's mission is to sustain the ecological health and productivity of the lands and waters entrusted to its care and provide for compatible human uses.

PURPOSE OF THE FOREST PLAN

For the next 10 to 15 years, the 2004 Land and Resource Management Plan (also called the 2004 Forest Plan or the Plan) will guide coordination of multiple uses (such as outdoor recreation, minerals, timber, watersheds, fish and wildlife, and wilderness, etc.) and promote sustained yields of products and services on the DBNF.

As a framework for decision-making, this Plan does not commit the Forest Service to any specific project or local action. Rather, it describes general management direction; estimates production levels, and assesses the availability and suitability of lands for resource management practices.

Starting with the concept of forest as a complex and not entirely understood ecosystem, the 2004 Forest Plan follows an "adaptive" approach to resource management. By monitoring outcomes in their ecosystem context -- a central element of adaptive management -- managers will be able to continually appraise results. Assumptions can then be reviewed and management direction adjusted in the light of knowledge gained from monitoring.

The Forest Service, with its research capability and practical experience, is positioned to advance ecosystem management far into the 21st century. The adaptive approach to forest management should enhance these efforts.

The 2004 Forest Plan will be implemented through a series of project-level decisions based on appropriate site-specific analysis and disclosure. The Plan does not contain a commitment to select any specific project. Instead, it sets up a framework of Desired Future Conditions with Goals, Objectives, and Standards to guide project proposals. Projects are proposed to solve resource management problems, move the Forest environment toward Desired Future Conditions, and supply goods and services to the public.

Goals, Objectives, and Standards, as well as land-use allocations, spell out management direction. Projected resource yields, types and amounts of services provided, and rates of implementation will depend on annual budgets.

Prior to drafting the proposed Forest Plan revision, an expanded interdisciplinary team representing the physical, biological, economic, and other sciences conducted a comprehensive analysis of the DBNF's management situation. This team of professionals from all levels of the Forest Service, as well as scientists from southern research agencies and academic institutions, documented the need to revise the 1985 Plan. Then a comprehensive notice and comment process engaged a broad spectrum of the public in compiling a list of issues facing the DBNF.

The issues were used to develop alternative management strategies, six of which were ultimately considered in detail. Utilizing the analysis of anticipated environmental consequences for each alternative, the Forest Supervisor for the Daniel Boone National Forest recommended, and the Regional Forester for the Southern Region of the Forest Service approved, the selection of Alternative C-1 as the preferred alternative for this Plan.

RELATIONSHIP OF THE FOREST PLAN TO OTHER DOCUMENTS

This Forest Plan is based on the selected alternative for managing the land and resources that is analyzed and described in an accompanying Environmental Impact Statement.

In addition to direction found in a Forest Plan, projects are also implemented through direction found in laws, rules, regulations, and the Forest Service directive system (a listing of these can be found in Appendix B); and the following programmatic decision documents:

- Record of Decision, Final Environmental Impact Statement for the Suppression of the Southern Pine Beetle (USDA Forest Service 1987)
- Record of Decision, Final Environmental Impact Statement for Gypsy Moth Management in the United States: A Cooperative Approach (USDA Forest Service and APHIS 1995)

Other sources which helped guide development of this Plan included but were not limited to:

- Guidance for Conserving and Restoring Old-Growth Forest Communities on National Forests of the Southern Region (USDA Forest Service 1997)
- An Assessment and Strategy for Conservation of Aquatic Resources on the Daniel Boone National Forest, Interim Report (USDA Forest Service 2001)
- Forest Scale Roads Analysis, Daniel Boone National Forest, (USDA Forest Service 2003)
- Viability Assessment for the Daniel Boone National Forest (USDA Forest Service 2003)
- National Fire Plan (www.fireplan.gov)

PLAN STRUCTURE

This Forest Plan consists of five chapters, a glossary, and appendices:

Chapter 1 - introduces the Forest Plan; explains its purpose, structure, and relationship to other documents; includes a brief description of the DBNF; and summarizes the analysis of the management situation as well as the significant issues that guided the revision.

Chapter 2 - outlines proposed Forestwide management direction, including Desired Future Conditions, Goals, Objectives, and Standards.

Chapter 3 - describes Prescription Areas and the specific management direction applied to each Prescription Area, including their Desired Future Conditions, Goals, Objectives, and Standards.

Chapter 4 - describes the four Management Areas.

Chapter 5 - gives direction for Plan Implementation, Monitoring, and Evaluation.

Appendices - provide supplemental information about the Plan.

FOREST PROFILE

The Daniel Boone National Forest proclamation boundaries encompass two separate areas. The larger area is a relatively narrow strip running 140 miles along the western edge of the Cumberland Plateau from the Tennessee border to within 20 miles of the Ohio border. This area was proclaimed in 1937 as the Cumberland National Forest. A second area, located to the east and separate from the original proclamation area and known as the Redbird Purchase Unit, was added in 1964. In 1966 the Forest was renamed the Daniel Boone.

Today, about one-third of the proclamation area's over two million acres -- nearly 700,000 acres -- is federally owned and managed by the USDA Forest Service. The federally owned tracts are discontinuous and scattered within the proclamation boundary. Individuals hold most of the privately owned land in tracts averaging from 100 to 300 acres.

The Daniel Boone lies mostly within the Northern Cumberland Plateau Section of the Eastern Broadleaf Forest (Oceanic) Province. The Northern Cumberland Plateau, an uplifted plateau, has been moderately dissected by stream action. Steep-sided, winding valleys and ridges mark the Forest's hilly to mountainous terrain. Clifflines, caves, and geologic arches are prominent features. Local relief varies from about 400 feet in the north to about 2,000 feet in the south. Thousands of miles of small branches and streams dissect this combination of flat-topped ridges and rolling hills.

More than 80 different kinds of soils are currently mapped on the Forest. Acid sandstone, shale, and some siltstone and limestone in alternating layers underlie the Forest. Soils formed from these various materials are mostly of mixed mineralogy, generally acidic, and possess low to moderate fertility.

Soil erosion losses range from an average low of about 0.1 ton per acre per year on undisturbed forested land; 10 tons per acre on cropland being cultivated under special-use authorization; to as

much as 50 to 100 tons or more per acre at surface-mining sites, development sites, and road construction sites.

Three rivers, the Licking, Kentucky, and Cumberland, drain portions of the Forest. Water quality is generally excellent, except in some smaller streams that are impacted by activities on private lands such as brine disposal from oil and gas drilling and acid discharges from abandoned surface and deep coalmines. However, streams with substandard water quality account for only three percent of the water flow.

Forested lands of the Daniel Boone are generally classified as mixed mesophytic forest and Appalachian oak forest. An extremely wide variety of species thrive in both the under- and over-stories, including more than 40 commercially valuable tree species. The Forest is a mosaic of various developmental stages of ecological succession with mostly upland hardwood types. Oak-hickory is the most common forest type. Shortleaf pine-oak forest type was well represented on the southern end of the DBNF until a major outbreak of the southern pine beetle, which began in late 1999, destroyed or damaged a majority of shortleaf pines across the Forest

The Daniel Boone provides habitat for a wide variety of terrestrial and aquatic fauna. Some of these species are relatively rare, including a number that are federally listed as threatened or endangered. Most species are relatively abundant, including huntable populations of white-tailed deer, wild turkey, gray squirrel, and ruffed grouse. Recent efforts by the Kentucky Department of Fish and Wildlife Resources and other partners have resulted in the establishment in and near the Daniel Boone of the largest elk herd in the eastern United States. Game fish are plentiful in the large lakes and a number of streams are stocked annually with trout.

The Forest's five million annual visitors make recreation one of the largest of its multiple uses. Within the Forest are 18,000 acres of designated Wilderness and 19 miles of Wild and Scenic Rivers. The proclamation area of the Forest is also home to three state parks and four Corps of Engineer-managed lakes. The Big South Fork National River and Recreation Area abuts the Forest's southern boundary.

About 75 percent of subsurface mineral rights on the DBNF are either outstanding in third parties or reserved by the previous surface owners. Minerals currently being extracted include coal, petroleum, natural gas, and limestone.

ANALYSIS OF THE MANAGEMENT SITUATION SUMMARY

This revised Forest Plan for the Daniel Boone National Forest replaces the Forest Plan in effect since 1985. The National Forest Management Act of 1976 (NFMA) requires that each national forest develop a Land and Resource Management Plan that is revised every 10 to 15 years, or when conditions change significantly. Efforts to revise the 1985 Plan began with an analysis of the management situation (AMS), which documented the need for a Plan revision.

Released in May 1996, the AMS confirmed the need for major changes in management direction by looking at the results of monitoring and assessing resource conditions, including supply and demand factors. It also reviewed changes in public policy and administrative direction. Input from the public as well as Forest Service employees was also taken into account.

Determinations of the AMS were divided into three categories:

1) Changes warranting a Plan revision: These are changes typically of a nature or magnitude that require a revision of a forest plan.
2) Changes warranting a Plan amendment: These are changes typically of a nature or magnitude that could be made through an amendment to a forest plan, but could also be included as part of a revision.
3) Changes within authority of the 1985 Plan: These are changed circumstances that could be addressed without change to forest plan management direction.

The official proposal to revise the 1985 Plan, included in a Notice of Intent to Prepare an Environmental Impact Statement, was based largely upon results of the AMS. A summary of its major findings follows.

CHANGES WARRANTING A PLAN REVISION OR AMENDMENT

1) **Ecosystem Management and Biological Diversity:** Current Forest Service policy places an emphasis on management for sustainable ecosystems. New tools and data are available that facilitate planning at the landscape level. The long-term objectives of the 1985 Plan did not consider some of the ecosystem functions, processes, and biological diversity concepts known today. Also, the significant cost of additional resource inventories, monitoring, and analysis are not covered in the 1985 Plan.

2) **Timber Management:** Changes in policy have affected the factors used to predict timber yield in the 1985 Plan. Forest management, which once emphasized timber production, now focuses on ecosystem management. This re-ordering of priorities has reduced the amount of suitable timberland by 26 percent. Since harvest volumes per acre have been significantly below projections, the timber program needs to be reviewed with the Forest Plan amended or revised accordingly. An increased interest in reducing timber sales in which returns are below-cost has resulted in an emphasis on harvesting stands having a higher per-acre value. Timber harvesting has come to be seen as a silvicultural tool that can improve overall forest health as well as create or enhance habitat for desirable species.

3) **Recreation Demand and Use:** Although overall recreational use has increased more slowly than predicted, some recreation areas have deteriorated over the past nine years due to

changes in use patterns and funding below levels anticipated by the 1985 Plan. Types of recreation uses have changed, with faster growth in horseback riding and off-highway vehicle use but slower increases in hiking and backpacking, for example. The 1985 Plan does not adequately address these changes. Dealing with such changes will bring significant costs and, for some facilities, will include the cost of improving accessibility in accordance with the Architectural Barriers Act of 1968 and Section 504 of the Rehabilitation Act of 1973.

4) **Federal Oil and Gas Leasing:** Under the Federal Onshore Oil and Gas Leasing Reform Act of 1987, the Forest Service must identify federal lands for which oil and gas leases could be sold and determine appropriate stipulations to protect surface resources. Leasing decisions will be subject to conditions listed in the National Environmental Policy Act of 1969.

5) **Non-timber Forest Products:** There is an increased demand for non-timber forest products, such as ginseng, mushrooms, etc., as well as timber and other traditional forest products. The Plan needs to address the economic, biological, and management impacts the increased demand will have on the overall Forest conditions.

6) **Heritage Resources:** The cost of the heritage resources program and the number of potentially significant sites are greater than predicted by the 1985 Plan. The cost of addressing heritage resources is great enough to affect a variety of management objectives and warrants a Plan amendment.

7) **Urban/Rural Interface, Commercial and Residential Development Adjacent to Forest lands:** The urban interface adjacent to the Forest has seen an increase in development as well as new types of development. These changes affect management options on lands immediately adjacent to Forest boundaries. The Plan should be amended to more accurately address the impacts of changing land ownership patterns adjacent to the Forest. A review of desired landownership patterns and associated guidelines for landownership adjustments is necessary to assure that both public interests and resource management needs are being met.

8) **Riparian Areas:** Riparian community habitat on the Forest merits review. These areas should be evaluated in the context of surrounding watersheds. Standards should be developed to ensure the biological and ecological integrity of riparian and aquatic resources and their contribution to long-term forest diversity.

9) **Monitoring:** Plan monitoring direction needs revision. Review of the Forest's management indicator species (MIS) is needed to incorporate assemblages of species that better represent habitat conditions. New Forest MIS need to be identified and incorporated into the Plan to represent communities that have been more clearly identified during implementation of the 1985 Plan.

10) **Forest Insects and Disease:** Although the 1985 Plan includes provisions for controlling newly identified pests, it does not address all of the currently threatening forest pests and invasive species, both native and non-native. Minor pests and invasive species can be addressed without amendment or revision of the 1985 Plan, but the major impacts expected from the gypsy moth and hemlock woolly adelgid need to be fully assessed and incorporated into new Objectives and Standards.[1]

[1] The southern pine beetle outbreak that began in late 1999 was unexpected and occurred after the AMS was completed.

CHANGES WITHIN AUTHORITY OF 1985 PLAN

1) **Water Quality/Abandoned Mines:** The public has become increasingly aware of the need for mine reclamation on the Forest. This issue should be considered as part of the resolution of other issues in a Plan revision.

2) **Hazardous Materials:** New laws concerning the handling of hazardous materials have come into effect since the 1985 Plan was adopted. Although not specifically identified in the Plan, compliance with such laws were considered a part of doing business during the development of the Plan.

3) **Forest Type Conversion:** In 1994, forest type distribution was within one percent of the range allowed by Amendment Six of the 1985 Plan. To provide habitat for the red cockaded woodpecker (RCW), an increase in pine and pine/hardwood stands in conformance with the Southern Regional RCW Management Plan would be necessary.

4) **Special Areas:** There has been an increased interest in identification of unique and special areas on the Forest such as potential Research Natural Areas and caves. Nominations of new areas can be addressed without Plan amendment or revision. A Plan revision could incorporate specific constraints and costs as other adjustments are made in Desired Future Conditions, Standards, and Monitoring.

5) **National Wild and Scenic Rivers:** The 1985 Plan called for changes relating to Wild and Scenic Rivers within the Forest. If Wild and Scenic River management plans alter the Forest Plan Objectives, then an amendment would need to integrate these without management objectives.

Note: Since the AMS was prepared in 1996, conditions have continued to change on the Daniel Boone and new information has been gathered. The most significant event was the southern pine beetle outbreak, beginning in late 1999, which destroyed or damaged most southern yellow pine over approximately 100,000 acres of the DBNF. The proposed Plan revision includes management direction to address restoration of the severely diminished southern yellow pine ecosystem.

SUMMARY OF ISSUES

Public involvement played a key role in the Plan revision process, including development of the Significant Issues. The DBNF made extensive efforts to inform all individuals and groups concerned with, or affected by, management of the Forest. Numerous and diverse opportunities were provided for individuals and organizations to be involved and offer comments throughout the process.

An early goal was to reach an informed understanding with the public regarding the resource management issues confronting the Forest. This collaborative effort proceeded to develop and then refine a range of alternatives for addressing the issues. Finally, this revised Plan was based on the selected alternative.

Public comments were essential in establishing a general direction for management of the Forest, including the type and amounts of goods and services that should be provided as well as environmental conditions that should be maintained.

Public involvement began with publication in the Federal Register on June 21, 1996, of the Notice of Intent (NOI) to prepare an environmental impact statement for a revised Forest Plan. The NOI included a list of preliminary issues and alternative management themes based on public comments gathered during evaluation of site-specific projects over the 10-year implementation of the 1985 Plan. Over the next year, a variety of public meetings, open houses, and listening sessions were held throughout the eastern part of the state and in Louisville and Lexington, the state's two largest cities.

Also in June 1996, the first edition of *The Boone Planner*, the Forest's newsletter, was published. This free publication informed interested individuals and organizations that the Forest Service was gathering information as a first step in the revision process. News releases were distributed to media in the region and direct notification was given to local and state officials as well as other federal agencies and private institutions.

After the initial phase of public involvement, the following issues were identified and then used to develop alternatives for the Plan revision:

1) **Fragmentation:** The wide-ranging nature of many forest-wildlife species requires relatively large, continuous parcels of habitat to meet their behavioral needs. This is especially important for wide-foraging, forest-nesting bird species native to the Daniel Boone. How and to what extent the Forest will provide for interior dependent species, particularly by reducing or mitigating the causes of fragmentation is a fundamental issue to be addressed in the Plan revision.

2) **Old-Growth:** Although older-aged forest is represented in the 1985 Plan, old-growth has not been adequately documented and may be under-represented in the Daniel Boone. On the other hand, old-growth conditions may be adequately provided for within current Wilderness and roadless areas as well as lands identified as unsuitable for timber production. The amount, distribution, and perpetuation of old-growth remain issues to be addressed in the Forest Plan revision.

3) **Rare Communities:** The Daniel Boone contains a diverse landscape with many rare or uncommon communities and associations. These include caves, clifflines, glades, small bogs and wetlands, and others. Many unique or special biological areas contain a relatively high density of rare species, some of which are federally listed as endangered or threatened. The 1985 Plan addresses federally listed and Forest-sensitive species but not their associated communities. Some management actions and forest uses can adversely affect rare communities. What communities or features should have some special designation and how should they be managed?

4) **Endangered, Threatened, and Sensitive Species:** A number of plant and animal species found on the Forest have declined in number to the point their rarity indicates a potential for loosing viability. However, rebuilding populations of endangered, threatened, or sensitive species remains a possibility. Methods of species recovery should be considered in the revision. The revised Forest Plan will also need to identify measures for protecting populations of and habitat for Proposed, Endangered, Threatened, and Sensitive (PETS) species.

5) **Fish and Wildlife Management:** National Forest System lands provide opportunities to address wildlife management and interests in ways not always possible on most other lands. The DBNF is large enough to accommodate the wide-ranging habitat needs of numerous

species. As public land, the Forest can make hunting, fishing, and viewing opportunities available to help fulfill public interests that may be limited or restricted on private lands. Sustaining habitats that can support populations sufficient to meet public expectations for hunting, fishing, and viewing should be a goal of the Forest Plan revision. Where conflicts occur between habitat needs, the revision must determine acceptable trade-offs while retaining diverse and healthy species groups across a wide variety of community types.

6) **Aquatic and Riparian Areas:** Some Forest uses and management activities can degrade the health of aquatic and riparian habitats as well as water quality. The interrelation of riparian habitat to neighboring lands and streams dictate that an entire watershed be used as the context for managing aquatic systems and riparian habitats. Management options range from excluding any activities in riparian areas to varying levels of vegetative manipulation and use in designated areas.

7) **Fire Management:** Wildland fire can be a serious threat to forest resources as well as to urban and other non-forest development. Prescribed fire can be a valuable tool for manipulating vegetation to achieve such management objectives as improved forest health. Timing, frequency, and location of prescribed burns remain issues. In all cases, the agency must provide adequate protection from the threat of unwanted fire, while also allowing fire to achieve planned objectives.

8) **Forest Health:** The spread of native and non-native invasive species of plants, insects, and pathogens; increased levels of stocking; and the continued suppression of wildland fire take a toll on Forest ecosystem health altering native forest composition, structure, and ecosystem function, while imposing economic and social costs. Some believe these damaging agents should be allowed to act upon the ecosystem without human intervention, but others believe management should act to reduce negative impacts.

9) **Timber Products:** Timber production raises several issues, including methods, amounts, locations, and types for harvest. Appropriate goals, including economic goals, need to be determined for this program.

10) **Minerals:** The American economy is highly dependent on mineral resources such as petroleum, natural gas, and coal. These resources occur on the DBNF, and in many cases the mineral rights are privately owned. While the rights of property owners must be respected and national needs accommodated, mineral extraction can adversely affect other resources such as soil and water, flora and fauna, heritage, and scenery. The Forest Plan revision should seek to balance these sometimes-conflicting interests.

11) **Recreational Opportunities:** The Daniel Boone National Forest provides a variety of dispersed and developed recreational opportunities to five million visitors each year. Growth in demand for recreational opportunities is likely to continue and new types of recreation may be introduced. While recreational activities can adversely affect Forest resources in various ways, differing recreational activities may create user conflicts or compete for the same resources. The Forest Plan revision should develop an appropriate mix of recreational opportunities that responds to increasing and changing demands and also provides adequate ecosystem protection.

12) **Scenery Resource Management:** Visitors generally expect to find natural appearing, visually pleasing landscapes in the National Forest. Many uses and management actions can either enhance or degrade the visual esthetics that users seek in the Forest. This important issue should be kept in mind as management decisions are made.

13) **Access Within the Forest:** The DBNF offers a variety of natural resources and recreational opportunities to the public. Access to the Forest via the road and trail systems is essential to fulfill these objectives. On the other hand, too many roads or trails as well as inappropriate types, placement, or use of roads and trails can limit the Forest's ability to sustain public benefits.

14) **Specially Designated Areas:** Management direction can be tailored to distinctive parts of the Forest. While Congress may designate certain waterways as Wild and Scenic Rivers or set aside certain areas as Wilderness, the Forest Service can assign special status to Geological, Botanical, Heritage, or Scenic and other areas. Should any new sections of the Forest receive special administrative status or be recommended for Congressional designation?

Natural Arch, Somerset Ranger District.

Chapter 2

FORESTWIDE DIRECTION

The Plan is organized around the Forest's biological, physical, and social resources. Forestwide direction provided in this chapter applies consistently across National Forest System land and provides management emphasis for the entire Forest.

Goal statements broadly describe the Desired Future Condition the Plan seeks to achieve. While Goal statements furnish direction, they are timeless and may not necessarily be achieved during the 10 to 15-year life of the Plan. Direction expressed in Goal statements was based on input from the public and Forest Service employees as well as state and local cooperators. State and federal statutes and other public policy also guided the process. Measurable actions taken to attain Goals are called Objectives.

While Goals and Objectives define management direction, Standards govern actions taken to meet Objectives. Standards often preclude or impose limitations on management activities or resource uses, generally for environmental protection or public safety. Standards are mandatory. Deviation from a Standard requires a Forest Plan amendment.

The Forest Monitoring Plan is designed to measure progress toward achieving Objectives and ensure compliance with Standards.

Forestwide Goals, Objectives, and Standards apply to the entire Forest unless superseded by specific Prescription Area direction. Projects will be evaluated to determine their adherence to Plan direction. Plan adherence is documented in project-level records. Chapter 5 of the Plan explains the framework used to develop monitoring methodologies and techniques.

Statutes, regulations, and Forest Service directives may be cited but are not normally repeated in the Plan. Some resource areas, such as heritage resources or Threatened and Endangered species, receive very specific direction from law, regulation, policy, Forest Service directives, and other sources, such as recovery plans. If a particular resource does not appear to be fully addressed in this Plan, further direction will most likely be found in the above sources. References to many of these may be found in Appendix B.

Decisions on new projects that implement the Plan will be based on site-specific analyses, and will be in compliance with the National Environmental Policy Act (NEPA) when applicable. Environmental analyses conducted under NEPA will be documented in accordance with the Council on Environmental Quality's Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act (40 CFR parts 1500-1508) and the Environmental Policy and Procedures Handbook (FSH 1909.15). Referenced policies, rules, and regulations may change without change to this Plan.

FORESTWIDE DESIRED FUTURE CONDITIONS

This section summarizes the desired condition of the Forest after 10 to 15 years of Plan implementation and then after 50 years. More detailed statements of Desired Future Conditions can be found in Chapter 3, where the specific, more specialized Prescription Areas are addressed.

THE FOREST IN THE SHORT-TERM

At the end of the first decade, changes in the overall character of the landscape will be small. The Forest will appear much as it did in 2003. However, the widespread loss of southern yellow pines in the late 1990s will have become more apparent. About 100,000 acres were affected to at least some degree by the southern pine beetle and most large trees have fallen or exhibit severely diminished structural strength.

The majority of these stands are succeeding to hardwoods, with a dense understory of saplings and little herbaceous or grassy cover underneath. Across the moisture gradient, from mesic to dry slope positions, shade-tolerant species that became established in the stands during the previous 80 years of fire exclusion are now poised to capture the canopy positions. With the lack of pine seed sources, the stands will be dominated by a group of mixed mesophytic species or oaks under some conditions. Ecologically functional southern yellow pine communities are greatly diminished across the landscape. Exceptions include areas that escaped the beetle epidemic and have been prescribed burned multiple times, have been planted in shortleaf pine, or are at such edaphic extremes that pines are the best competitors.

The processes and structure necessary to maintain the biological diversity of the DBNF are increasingly supported across the whole landscape. An old-growth network has been established across the Forest. Both the Designated Old-Growth and Habitat Diversity Emphasis Prescription Areas have helped ensure a land base for communities such as upland yellow pine and oak woodlands and grasslands, which require human manipulation for their existence.

Most management-caused changes to the landscape are the result of efforts to restore upland communities. Yellow pine seedlings are planted yearly to supplement natural regeneration. Prescribed burning is used increasingly, especially to promote oak and pine communities. Fire is used in conjunction with thinning to accelerate attainment of Desired Future Conditions. Overstocked pine, hardwood, or mixed stands, and stands with an understory of shade-tolerant invasive tree species will be focused upon for management. Thinning, burning, and planting helps restore upland communities. Timber harvest is used as a tool to achieve Desired Future Conditions. Oak advanced regeneration is promoted in these stands. Communities and rare species found in the pre-1700 fire regime are reappearing in these areas.

Oil and gas wells are developed on the Forest and underground mining of federally owned coal takes place. Development of federal minerals brings little change to the overall Forest landscape, however. No surface mining of coal occurs on the Forest. Mineral development conforms to the Forest's Goals, Objectives, and Standards, which are geared toward ecosystem management and species viability. Certain Prescription Areas, such as the Rare Communities and the Riparian Corridor, protect areas of priority or concern. Stipulations and recommendations included in mineral development projects take into account the potential impact on a wide range of other resources,

giving guidance as to when, where, and how such activities are appropriate. Areas around federally owned coal are examined to determine their suitability to withstand the surface impacts sometimes associated with underground coal mining. Even with these protections, there are still opportunities for oil and gas development in most areas of the Forest.

While the Forest landscape is beginning to move toward the diverse activities outlined in the Multiple Use Sustained Yield Act of 1960, ecosystem management remains a Forest priority. The road system provides adequate access for public and administrative use with minimal damage to resources. Most roads have native surfacing and are rough and irregular. Public access on some roads is restricted either seasonally or permanently. New road construction is minimal, but road maintenance continues for public access and resource protection.

The character and qualities of the Forest that draw most visitors continue to improve. The DBNF is aware of, and striving to fill, its niche in the provision of outdoor recreational opportunities. A broad spectrum of recreational opportunities, ranging from primitive to developed, is available. Visitors of all abilities find a diversity of well-maintained facilities and high quality, visually appealing forest settings.

The unique characteristics of specially designated areas such as Wilderness, Wild and Scenic Rivers, Red River Gorge Geological Area and Natural Arch Scenic area are protected. Wilderness visitors encounter old-aged, late-successional forests with primitive conditions with little evidence of human contact. Backpackers in Wilderness areas encounter primitive conditions and minimal evidence of human influence.

Opportunities for camping, motorized and non-motorized trail use, hunting, rock climbing, fishing, boating, and other recreational activities in undeveloped areas are provided in a manner that protects the ecosystem and heritage resources. All-terrain vehicle users access established networks of interconnected trails. Developed recreation areas provide safe, family-oriented outdoor recreational experiences in natural settings. Amenities in these developed recreation facilities accommodate the expectations of users. Accessibility is a part of the recreation facility setting.

The Forest is actively engaged in providing information and environmental education to the public through brochures, electronic media, interpretive signs, and educational programs both on- and off-Forest. Interpretive information about recreational opportunities, the natural setting, and environment is readily accessible. Increased outreach to various public groups enables the Forest to better understand its constituents' needs and interests.

THE FOREST IN THE LONG-TERM

A variety of life is maintained on the Forest. Populations of native species, once rare or declining, are stable or increasing. Non-native invasive species outbreaks are infrequent and controlled. A strengthened ecosystem enables the Forest to better withstand and recover from catastrophic disturbance.

Gypsy moth, a non-native invasive species, holds the potential to cause the next catastrophic change in vegetation composition. Large, old hardwood trees, mostly oak, are the most susceptible to gypsy moth attack. Activities that thinned forest vegetation, such as cutting selected trees and prescribed burning, provide for advanced regeneration of desired species, such as oaks. Thinning and advanced regeneration are likely to play a role in maintaining oak as a component of the forest.

The Hemlock woolly adelgid, another invasive species, is a threat to hemlock trees. A noticeable decline in hemlock trees may occur over a long period, unless introduction of biological predators or other control methods prove effective.

The individual values and ecological functions of flood plains, groundwater, lakes, riparian areas, springs, streams, and wetlands are protected and enhanced. Changes in management have maintained or improved soil productivity and air quality.

Fire-mediated habitat has been restored throughout the Forest. Ongoing prescribed fire programs for habitat manipulation and fuel reduction have also reduced the risk of wildland fire.

The DBNF is moving towards an older forest condition with a diverse representation of habitats. Old-growth forest, yellow pine stands, grasslands, and dispersed water sources for wildlife are more prevalent. Areas on the Forest designated as old-growth are taking on the characteristics of old-growth forest ecosystems, i.e., old trees with their related structural attributes.

Geological features such as arches, caves, and rockshelters are protected from abuse. Heritage resources, such as prehistoric material remains within rockshelters, are categorized and protected.

A sustainable mix of desired uses, valued characteristics, and services provides long-term benefit to local communities and the broader public. Renewable products such as timber and medicinal plants are harvested on a sustainable basis. In addition, federal mineral resources are developed to help meet the nation's resource needs. The rights of private mineral owners are accommodated as Forest resources are protected. Habitat is available to sustain recreational wildlife pursuits such as viewing, photographing, hunting, and fishing.

An adequate infrastructure (e.g., road and trail network, buildings, and other facilities) supports the Forest's Desired Future Conditions. The Forest is progressing toward an ownership pattern (surface and subsurface) that facilitates management.

The Forest Service engages the public and other agencies and organizations in cooperative, collaborative efforts that build the public's trust and support. Interpretive and educational services are provided to a wide spectrum of the public, including Forest visitors, school children, interest groups, and civic organizations. The news media are supplied with information that can be developed into stories explaining the value of Forest resources and the importance of attaining Forest Goals.

FORESTWIDE GOALS AND OBJECTIVES

Plant and Animal Communities and Unique Resources

GOAL 1 **Maintain a variety of life and recover native and desirable non-native populations that are rare and declining.[2]**

GOAL 1.1 **Protect and/or enhance current and potential habitat for Proposed, Endangered, Threatened (PET) species, or Sensitive (S) species and Conservation species. Evaluate habitats to determine those capable of supporting re-introduction of PETS species.**

Objective 1.1.A. During project analysis and implementation, protect, maintain, or enhance habitat for bat species. Management activities should:

a) Protect or enhance habitat for PETS and Conservation bat species, including significant hibernation and maternity caves/rockshelters.
b) Maintain and protect roost trees used by PETS bat species as well as foraging/swarming habitat around significant hibernation, staging, and maternity sites.
c) Protect, maintain, and enhance Indiana bat roosting, foraging, and maternity habitat.
d) Maintain and enhance roosting and foraging habitat for Indiana bats during projects designed to manage over-story vegetation.

Objective 1.1.B. Protect or enhance habitat for species identified by Partners in Flight (PIF) as well as others that need special attention. Management activities should:

a) Provide artificial cavities and nest boxes for species that may be limited by cavity availability.

b) Create and maintain at least one approximately 7,400-acre area of cerulean warbler habitat[3] in the Licking River Management Area, Upper Kentucky River Management Area, and the Jellico Mountains of the Cumberland River Management Area. Each 7,400-acre area can be composed of tracts at least 618 acres in size connected by corridors of either upland hardwood forest or riparian areas. Upland hardwood forest corridors should be no more than two miles long, and at least ¼-mile wide (see Figure 2 - 1 for example of possible pattern).

[2] Aquatic PET species are also addressed in the Riparian Corridor prescription (1.E).

[3] Predominantly mature (age≥70), open (60 BA and up) contiguous upland hardwood or riparian forest (canopy with moderate to dense shrub/midstory layers, large grapevines are required in the mix; Buehler and Nicholson 1997), with some trees >20 in.; can be upland or bottomland/riparian. Contiguous is defined as having no more than 5 percent of the area in grassy openings, regenerating forest with less than 40 BA canopy, or roads greater than 50 ft. in width; tracts may be composed of blocks of minimum 618 acres in size connected by upland hardwood corridors approximately 0.25 mile wide or riparian corridors at least 100 ft. wide, neither of which is more than 2 miles long.

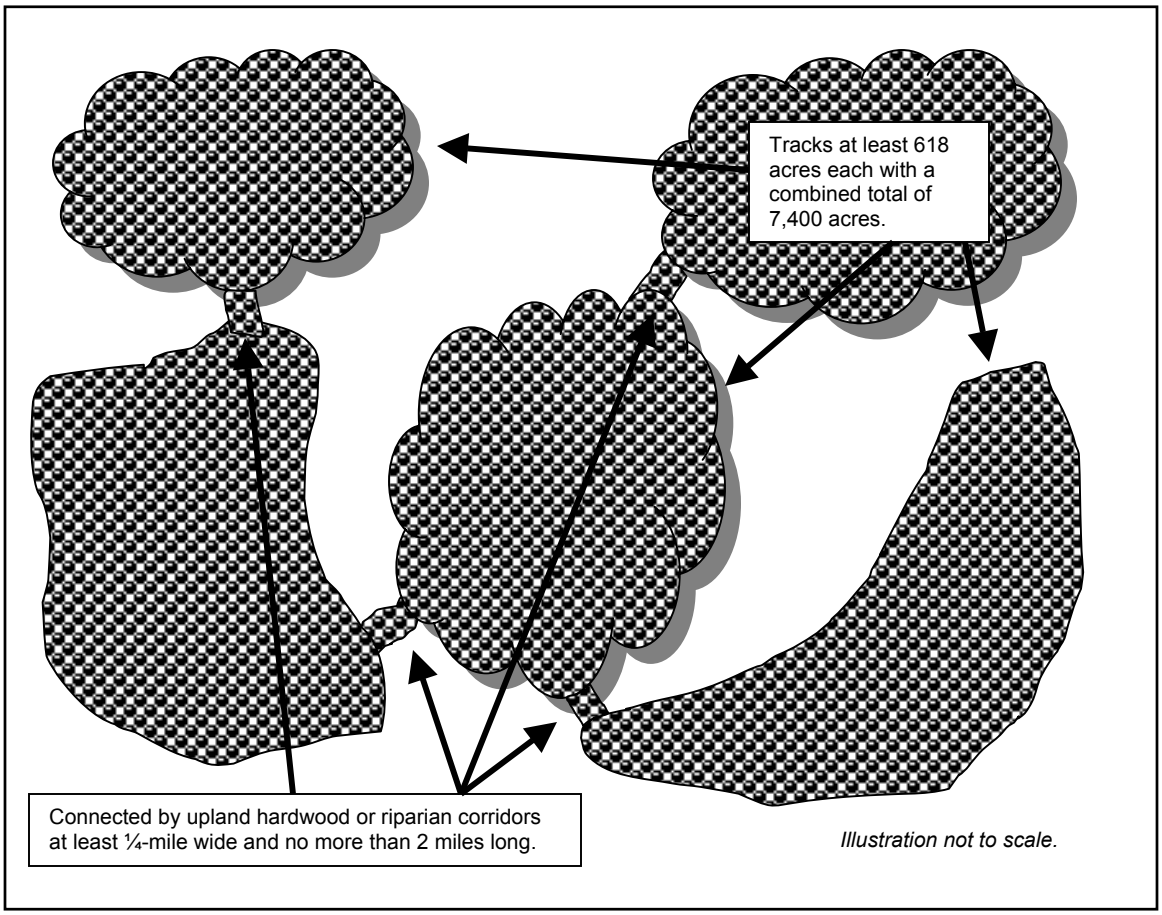


Figure 2 - 1. Possible pattern for cerulean warbler habitat.

Objective 1.1.C. Protect PETS and Conservation species from indiscriminate collection for personal, scientific, medicinal, or commercial use.

Objective 1.1.D. Restore and maintain 3,000 acres of pitch pine and pitch pine-oak forest types on appropriate landtype phases.

Objective 1.1.E. Maintain existing white pine/hemlock habitat associations in riparian and cove positions.

Objective 1.1.F. On appropriate landtype phases, restore and maintain 18-24 percent of forest acreage in forest types having a significant (>30%) component of yellow pine.

GOAL 1.2 Create and maintain water sources with a mixture of temporary/seasonal and permanent shallow water pools throughout the Forest.

Objective 1.2.A. Establish water sources adjacent to mature forest and/or woods road corridors.

Objective 1.2.B. Establish upland water sources (e.g., seasonal or permanent waterholes), within five miles of significant Indiana bat hibernacula, at a frequency of one every half-mile in upland areas and along ridgetops.

Objective 1.2.C. Toxic standing water sources (e.g. brine pits and oil catch basins) are filled, covered, or otherwise modified in an environmentally appropriate manner to prevent wildlife from using them.

GOAL 1.3 Ensure continued persistence of high elevation (>2000 feet) forest communities.

Objective 1.3.A. Acquire and maintain at least two 1,000-acre blocks of vegetation (predominantly forest) of at least 1,900 feet elevation, and where possible 2,500 feet or higher along Pine Mountain.

Objective 1.3.B. Develop a prescription for high elevation areas as lands are acquired.

GOAL 1.4 Develop a network of old-growth areas of various sizes to support the distribution, linkages, and representation of old-growth forest community types on the Forest.[4]

Objective 1.4.A. Within each management area, avoid regeneration of stands that are in 10-year age-classes containing less than one percent of all forest land.

Objective 1.4.B. Maintain at least eight percent of each old-growth type (USDA Forest Service 1997) in patches at least 300 acres in size. Acreage can be contributed by any or all Prescription Areas that are recognized as *future* old-growth and by the 1.I-Designated Old-Growth Prescription Area.

Objective 1.4.C. Continue the assessment of old-growth criteria in stands identified (USDA Forest Service 1997) as *possible* old-growth.

GOAL 1.5 Provide for grassland habitat.

Objective 1.5.A. Provide for 2,200 acres of grassland habitat in various Prescription Areas. Promote native warm season grasses and associated forbs in upland grassy openings.

Objective 1.5.B. Encourage the development of native grasses and forbs in non-upland grassy openings.

[4] These areas can be found in 1.I. Designated Old-Growth or other Prescription Areas recognized as *future* old-growth. Managers also have the option to include individual stands that are managed as old-growth, regardless of the Prescription Area in which they are found.

GOAL 1.6 Maintain relatively undisturbed microclimates and hydrologic systems of caves and karst ecosystems along with their flora and fauna. Allow speleothems, speleogens, and other unique cave formations to continue to develop under relatively natural conditions.

Objective 1.6.A. Manage the Forest to ensure that water flowing into cave systems contain relatively normal, fluctuating background levels of sediment, organic matter, and dissolved minerals.

Objective 1.6.B. Provide for the discovery, survey, monitoring, and protection of cave and karst resources.

Objective 1.6.C. Complete the review of all nominated significant caves and designate significant caves as defined in 36 CFR 290.

Objective 1.6.D. Complete management plans for significant caves as defined in 36 CFR 290.

GOAL 1.7 Provide adequate habitat to support populations of Management Indicator Species.

Objective 1.7.A. Provide adequate habitat to support populations of the following Management Indicator Species:

SPECIES	CATEGORY	TARGET HABITAT OR RELATED OBJECTIVES
Acadian flycatcher	Species of Special Interest[5]; Ecological Indicator—Major Forest Community	Riparian corridor forest, >80 years old; -1.1.B, 1.1.E, 1.E.2.A, 1.E.2.E
Black-throated green warbler	Species of Special Interest; Ecological Indicator—Major Forest Community	Dense cove forest >80 years old; 1.E.2.A, 1.K.1.J
Cerulean warbler	Species of Special Interest; Representative of Habitat Association	Upland hardwood or mixed hardwood-yellow pine, >60 BA but 70-90 BA average, >41 years old; DB-1.1.B, 1.K.1C, 1.K.2.L
Summer tanager	Species of Special Interest; Ecological Indicator—Major Forest Community	Upland hardwood or mixed hardwood-yellow pine, 30-60 BA, >50 years old; 1.K.2.J, 1.K.2.K
Chipping sparrow	Species of Special Interest; Ecological Indicator—Major Forest Community	Upland hardwood or mixed hardwood-yellow pine, <30 BA with grassy layer, >50 years old, 1.K.2.A, 1.K.2.B, 1.K.2.C, 1.K.2.D, 1.K.2.E, 1.K.2.H, 1.K.2.I
Northern cardinal	Species of Special Interest; Ecological Indicator—Major Forest Community	Upland hardwood or mixed hardwood-yellow pine, <30 BA with shrub layer, >50 years old; 1.K.2.H, 1.K.2.I
Field sparrow	Species of Special Interest; Representative of Habitat Association	Grasslands, including old fields, prairie remnants, wooded grassland; DB-1.5.1, DB-1.5.2, 1.K.1.B, 1.K.2.A, 1.K.2.B, 1.K.2.C
Eastern towhee, Yellow-breasted chat	Species of Special Interest; Representative of Habitat Association	Any forest type, recently cut over, 0-10 years old; 1.K.1.A
Ovenbird	Species of Special Interest; Representative of Habitat Association	Older (not necessarily old-growth) forest, 70-90 BA average for southern yellow pine-oak communities, up to 130 BA for mesic communities; 1.K.1.D, 1.K.1.L, 1.K.2.G
Pine warbler	Species of Special Interest; Ecological Indicator -- Major Forest Community	Yellow pine communities, 70-90 BA, >41 years old; DB-1.1.F, 1.I.1.D, 1.K.2.A, 1.K.2.G
Prairie warbler	Species of Special Interest; Representative of Habitat Association	Yellow pine communities, 0-10 years old, such as those recovering from southern pine beetle infestations through natural or artificial regeneration; DB-1.1.F, 1.K.1.A, 1.K.2.A, 1.K.2.G
Northern bobwhite quail	Species of Special Interest; Ecological Indicator -- Major Forest Community; Demand Species	Woodland and wooded grassland, predominantly mature yellow pine or mixed yellow pine hardwood, 25-50 BA, with a predominantly warm season grasses and forbs herbaceous layer with scattered patches of brush. Also open grassland; DB-1.1.F, 1.K.2.A, 1.K.2.B, 1.K.2.C, 1.K.2.D, 1.K.2.E
White-tailed Deer	Demand Species	Various; DB-1.5.1, DB-1.5.2, 1.K.1.A, 1.K.1.B, 1.K.1.L, 1.K.1.M, 1.K.2.J, 1.K.2.K, 1.K.2.L
Pitch pine	Species of Special Interest	Pitch pine regeneration, artificial or natural; DB-1.1.D, DB-1.1.F, 1.K.2.A, 1.K.2.G

Aquatic macro-invertebrate assemblage – Indices based on aquatic macro-invertebrate assemblages fulfill all the criteria/definitions of MIS and are more effective than any individual or small group in reflecting the health of an aquatic system. Such indices reflect community structure and function as well as the physical and chemical parameters of an aquatic system. Because these indices are not individual or groups of species, they will not be referred to as management indicator species. However, they will be used in lieu of MIS.

[5] See 36 CFR 219.19 (a)(1) for discussion of these categories.

GOAL 2 **Improve the ability of the Forest's ecosystems to withstand and recover from disturbance (Forest Health), especially catastrophic disturbance, either naturally occurring or introduced. Reduce the compounding impacts of catastrophic events.**

GOAL 2.1 **Increase the amount of forested land where stand growth equals or exceeds loss; improve stand structure and function such that stands are more resistant to catastrophic loss (Prevention).**

Objective 2.1.A. Within each stand, the relationship of basal area, number of trees, and average tree diameter is below the 80 percent stocking level, as shown in Figure 2 - 2.

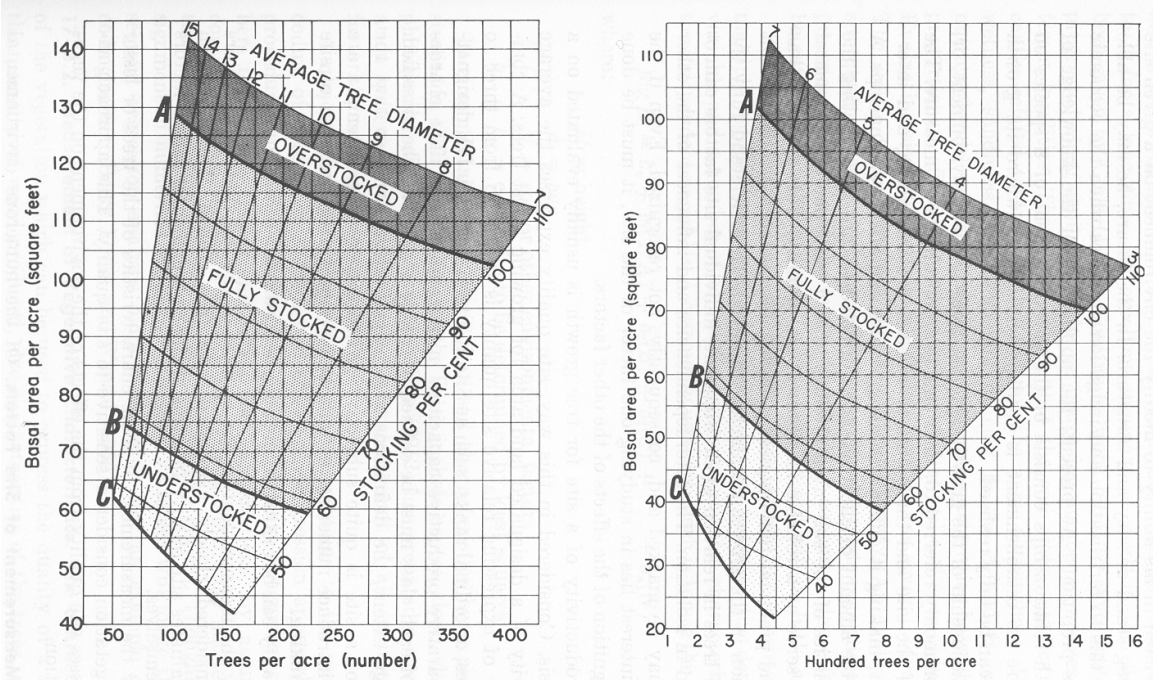


Figure 2 - 2. Stocking charts for upland hardwood (oak) stands (Gingrich 1964)

Objective 2.1.B. Regeneration occurs in the understory of old-age stands, which consists of the desired type (species), condition, and quantity capable of dominating an area following wildland fire, insect and disease epidemics, and other disturbances that can alter the landscape.

Objective 2.1.C. Incorporate into the Fire Management Plan the opportunity to use lightning-ignited wildland fires to meet management Objectives.

GOAL 2.2 Establish and maintain seed production areas.

Objective 2.2.A. Establish 10 seed production areas on each district to support collection of seed from various species (i.e., shortleaf pine, pitch pine, red and white oaks) that may be needed to meet reforestation objectives. Each area would be approximately 5 to 20 acres in size.

Objective 2.2.B. Select, identify, and retain trees that exhibit desirable phenotypic (observable) characteristics, within seed production areas.

Objective 2.2.C. Thin seed production areas to remove trees exhibiting undesirable character or trait, and to stimulate seed production.

Objective 2.2.D. Fertilize seed production areas to stimulate root and crown development as well as seed production.

Objective 2.2.E. Prune trees in seed production areas to eliminate undesired branches and to improve access.

Objective 2.2.F. Understory vegetation within seed production areas is grasses or low, sparse shrubs.

Objective 2.2.G. Access to seed production areas and within these areas provide for efficient and safe gathering of seed using mechanical equipment such as lift-buckets.

GOAL 2.3 Reduce outbreak populations of invasive species, or eradicate isolated infestations of invasive species from becoming established.

Objective 2.3.A. Eradicate isolated infestations of gypsy moth, and use the slow-the-spread strategy to monitor and manage gypsy moth populations ahead of the transition area.

Objective 2.3.B. Manage isolated occurrences of invasive species to avoid outbreak conditions.

Objective 2.3.C. Reduce the risk of damage from native and non-native invasive species through integrated pest management strategies.

GOAL 2.4 Re-introduce fire use across the landscape to increase biodiversity and improve resilience and stability of ecosystems.

Objective 2.4.A. Move acres from Fire Regime Condition Classes 3 and 2 into Classes 2 and 1.

Objective 2.4.B. Reduce/eliminate white pine and other fire-intolerant species from upland, fire-mediated areas.

Objective 2.4.C. Annually increase the number of acres to be prescribed burned, based on the following schedule:

Year	1	2	3	4	5	6	7	8	9	10
Objective	15,000	19,000	23,000	27,000	31,000	35,000	39,000	43,000	47,000	50,000
Range	7,500	9,500	11,500	13,500	15,500	17,500	19,500	21,500	23,500	25,000
	22,500	28,500	34,500	40,500	46,500	50,000	50,000	50,000	50,000	50,000

GOAL 3 Manage and/or restore watersheds to ensure the quality and quantity of water necessary to protect ecological functions, aquatic species and habitats, and support state designated beneficial uses.

Objective 3.0.A. Protect or enhance habitat for PETS species in seep, streamhead, or swamp habitat.

Objective 3.0.B. Incorporate information for karst groundwater basins, including GIS mapping, as information becomes available.

Objective 3.0.C. Concentrate restoration efforts in watersheds with impaired water bodies on Kentucky's Clean Water Act section 303(d) list or in watersheds that are a high priority for protection[6].

Objective 3.0.D. Reduce the number of impaired water bodies on Kentucky's CWA 303(d) list.

Objective 3.0.E. Cooperate and coordinate with state and local agencies on Total Maximum Daily Loads (TMDLs) and watershed assessments.

GOAL 3.1 Manage instream flows and water levels to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values.

Objective 3.1.A. Collaborate with other agencies to manage instream flows and water levels.

GOAL 3.2 Within the area 25 feet on either side of scoured ephemeral stream channels, maintain the ability of the area to filter sediment from upslope disturbances, control sediment within the area, and maintain channel stability.

GOAL 4 Maintain or improve soil productivity and air quality.

Objective 4.0.A. Maintain productive potential of the soil on at least 85 percent of each project area following land management activities.

GOAL 4.1 Reduce air pollution impacts on the Daniel Boone National Forest and Class I areas in the region.

Objective. 4.1.A. Work cooperatively with air management agencies and regional haze planning organizations to improve air quality.

GOAL 4.2 Conduct the fire management program in a manner that minimizes the impacts of smoke on air quality standards and visibility goals.

Objective. 4.2.A. Demonstrate conformity with the State Implementation Plan for any prescribed fire planned within EPA-designated "non-attainment" and "maintenance" areas.

Objective. 4.2.B. Best available smoke management practices will be used to minimize adverse effects of prescribed fire on public health safety and visibility.

[6] USDA 2001, Walker 2001a

Objective. 4.2.C. Comply with Kentucky's Smoke Management Program for prescribed fire, when the program is certified by the U.S. Environmental Protection Agency.

GOAL 5 Protect geological features such as arches, caves, and rock shelters.

GOAL 6 Preserve heritage resources.

GOAL 6.1 Manage heritage resource properties for the benefit of present and future generations.

Objective 6.1.A. Maintain heritage resource site and inventory maps and index set. Consult with the State Historic Preservation Officer and Office of State Archaeology on a regular basis.

Objective 6.1.B. Initiate protection of significant heritage resource properties as soon as they are discovered.

Objective 6.1.C. Establish a program to reduce the backlog of sites to be evaluated for National Register of Historic Places eligibility.

Objective 6.1.D. Develop management plans for historic properties that have been determined worthy of preservation and protection.

GOAL 6.2 Improve and maintain government-to-government relationships with federally recognized tribes whose ancestral homelands included lands managed by the Forest.

Objective 6.2.A. Consult with federally recognized Indian tribes regarding proposed Forest Service policy or actions that may affect traditional tribal heritage values or practices and areas of tribal interest.

Objective 6.2.B. Protect Indian sacred or spiritual sites and accommodate access to these sites by Indian practitioners.

GOAL 6.3 Continue the Forest's inventory of heritage properties.

Objective 6.3.A. Develop an annual survey program using the following order of priorities:

a) Planned projects that may affect historic properties including, but not limited to, land exchanges, mineral development, silvicultural activities, recreation, and other construction projects
b) Red River Gorge Geological Area (including Clifty Wilderness)
c) Areas of intensive dispersed recreation use
d) Beaver Creek Wilderness
e) The Large Reservoirs Prescription Area
f) Horse Lick Creek watershed
g) Other areas.

GOAL 6.4 Determine the eligibility of inventoried heritage properties for listing on the National Register of Historic Places (NRHP) and nominate qualifying properties.

Objective 6.4.A. Create an annual program of site evaluation using the following order of priorities:

a) Affected sites that cannot be protected in any other manner
b) Sites that have the potential for addressing the role of human beings in past and present landscapes and natural resource issues
c) Sites within areas of "high exchange potential" which have been recommended for further testing
d) Sites located within the Red River Gorge Geological Area (including Clifty Wilderness) that have been recommended for further evaluation
e) Sites located in the Beaver Creek Wilderness Area.

GOAL 6.5 Protect all heritage properties as outlined in 36 CFR 800 and detailed in FSM 2361. Design and implement appropriate procedures to protect significant heritage resource properties. Ensure that permits and contracts contain adequate stipulations for protection of significant heritage resources.

Objective 6.5.A. Avoid or minimize adverse effects on significant heritage resource properties.

Objective 6.5.B. Check the condition of significant heritage resource properties periodically; document results.

Objective 6.5.C. Mitigate anticipated adverse impacts through data recovery when an NRHP-listed or eligible property cannot be fully protected. For historic structures, document mitigation measures according to Historic American Buildings Survey/Historic American Engineering Record standards. Data recovery for archaeological sites will be consistent with a research plan developed in consultation with the State Historic Preservation Officer and interested recognized Indian tribes.

Objective 6.5.D. Protect all sites by maintaining the confidentiality of their locations except where they are used for interpretation and are appropriately protected.

GOAL 6.6 Encourage use of heritage resource properties for research and academic purposes. Interpret and develop significant properties for the enjoyment of the public.

GOAL 6.7 Curate artifacts and records at an approved facility and make them available for study.

A Variety of Uses

GOAL 7 **Provide a sustainable mix of desired uses, valued characteristics, and services to improve the long-term benefit to local communities and the public.**

Objective 7.0.A. Provide an opportunity for development of a lodge at Cave Run Lake.

GOAL 7.1 **At least once every five years, formally monitor public use and satisfaction with the recreation program and adjust target markets or facilities and programs as needed.**

GOAL 7.2 **The Forest's Scenic Integrity Objectives will determine actions needed to maintain or improve the scenic integrity of an area where activity is proposed. Table C - 5 in Appendix C identifies the initial Scenic Integrity Objectives for each prescription based upon the existing inventory map located in the Forest Supervisor's Office. The map will be updated as site-specific analysis is conducted.**

GOAL 7.3 **Provide additional rock climbing, equestrian, and OHV trail riding opportunities.**

GOAL 7.4 **Incorporate management practices that reduce and/or alleviate negative human/wildlife interactions.**

Objective 7.4.A. During routine maintenance/upgrading, evaluate containers (dumpster, trash receptacles, food storage boxes, etc.), for replacement or retrofitting with wildlife resistant equipment.

GOAL 8 **Provide renewable products on a sustainable basis when such provision is compatible with Desired Future Conditions.**

GOAL 8.1 **Emphasize utilization based on market conditions.**

GOAL 8.2 **Conduct salvage or sanitation harvests.**

GOAL 8.3 **Select leave trees first to accomplish habitat objectives, then to improve the stand's survivability and potential timber value.**

GOAL 9 **Provide mineral commodities for current and future generations commensurate with the need to sustain the long-term health and biological diversity of ecosystems.**

GOAL 9.1 **Facilitate federal mineral development in a timely manner while protecting other resources.**

GOAL 10 **Conserve Forest resources while accommodating the rights of private mineral owners.**

GOAL 10.1 **Facilitate the exploration, development, and production of mineral and energy resources of DBNF lands with valid rights.**

GOAL 10.2 **Ensure that lands disturbed by mineral and energy activities, both past and present, are reclaimed using the best scientific knowledge and principles and returned to other productive uses. Such uses should be consistent with the ecological capability of the area and conform to land management goals**

GOAL 11 **Provide habitat to sustain wildlife populations suitable for recreational pursuits such as viewing, photographing, hunting, and fishing.**

Efficient, Effective Infrastructure

GOAL 12 **Provide a road and trail network, buildings and other facilities that support the Forest's Desired Future Conditions.**

Objective 12.0.A. Reconstruct, relocate, close and stabilize, or obliterate roads and trails that do not meet their management Objective.

GOAL 12.1 **Minimize road or trail sediment that reaches streams.**

Objective 12.1.A. Conduct unit analysis (such as watershed or landscape) Forestwide on a 10-year cycle with the order of analysis based in part upon the presence of PETS species or areas susceptible to slope failures caused by roads and trails traversing unstable soils or geology. The analysis should address the following needs:

a) All stream fords should be hardened crossings. This includes, as a minimum, bedrock stream or concrete plank crossings, both with hardened approaches.

b) Reduce the number of road/stream crossings and the amount of road occurring within 100 feet of streams whenever possible.

c) Identify road needs and adjust the number, maintenance level, location, and design as necessary. Reduce road densities on slopes greater than 40 percent where alternatives are available.

d) Relocate roads out of areas such as riparian areas, near rare communities, archeological sites, etc., whenever possible.

e) Reclassify and adjust the existing road system so that expected budgets will be adequate to maintain the system. Identify unneeded roads when reclassifying the existing road system.

f) Identify unclassified roads and then eliminate or classify, ensuring that some entity is responsible for their maintenance.

Objective 12.1.B. Bring 20 percent of existing system trails into compliance with erosion control standards (Best Management Practices) each year; consider relocating, reconstructing, or closing trails that cannot be maintained to standard. Give priority to those affecting riparian/aquatic areas.

Objective 12.1.C. Annually, inventory 20 percent of user-developed trails in conjunction with annual integrated inventories. Close and/or rehabilitate trails causing resource damage. Give priority to those within riparian/aquatic areas. If appropriate, trails may be added to the Forest's trail system.

GOAL 12.2 Provide motorized and non-motorized trails to address recreational demand.

Objective 12.2.A. When provided for, off-highway vehicle trail riding opportunities should be 15 miles or more in length.

GOAL 12.3 Coordinate the maintenance of roads maintained by other agencies to better support Forest ecosystem sustainability.

Objective 12.3.A. Convert qualifying DBNF system roads to Public Forest Service Roads as funding permits.

GOAL 13 Obtain a National Forest ownership pattern (surface and subsurface) that facilitates management efficiency and supports the Forest's Desired Future Conditions.

GOAL 13.1 Ensure that legal public access is secured for National Forest System lands for present and future resource management needs.

Objective.13.1.A. During the 10-year inventory cycle, identify inaccessible Forest lands and acquire unrestricted perpetual easements or fee simple title in land, as appropriate, to access such lands.

Objective 13.1.B. Acquire rights-of-way for all existing and proposed development roads and trails when access cannot be accommodated on National Forest System land.

GOAL 13.2 Consolidate Forest land ownership to facilitate management efficiency, reduce fragmentation, enhance public benefits and meet resource management needs through acquisition which may include the following methods: purchase, donations, exchange, right-of-way acquisitions, transfers, interchanges, sales, and boundary adjustments.

Objective 13.2.A. Reduce the ratio of boundary (miles) to land area (acres) -- from the current ratio of approximately 1:175 to a desired 1:200 -- through purchase, donation, exchange, right-of-way acquisition, transfer, interchange, and boundary adjustment.

Objective 13.2.B. Acquire mineral rights through purchase, exchange, or donation in the following areas: designated wilderness, designated wild rivers, geological areas, research natural areas, rare communities, and other areas as prioritized in the Guidelines for Land Ownership Adjustment. Until such rights are acquired, the exercise of reserved and outstanding mineral rights to explore and develop mineral resources will be respected.

Objective 13.2.C. Prepare and maintain a land ownership adjustment map based on Goals and Objectives for a given area. The Forest Supervisor may approve changes to the map, as long as Forest Plan Objectives are met. This map will be available in the Regional Office, the Forest Supervisor's Office, and District Offices. This map will include a graphic representation of the desired future ownership of the Forest**.**

Objective 13.2.D. Convey National Forest System lands better suited for non-federal ownership through exchange, transfers, interchanges, sales, and boundary adjustments. When considering tracts or partial interest in land for federal land conveyances by exchange or other transfer, utilize the following criteria (not listed in order of priority):

a) Lands inside or adjacent to communities or intensively developed private land, and chiefly valuable for non-National Forest System purposes.

b) Parcels that will serve a greater public need in state, county, city, or other federal agency ownership.

c) Inaccessible parcels isolated from other National Forest System lands. Parcels intermingled with private lands.

d) Parcels within major blocks of private land, the use of which is substantially for non-National Forest System purpose.

e) Parcels having boundaries, or portions of boundaries, with inefficient configurations, e.g., projecting necks or long, narrow strips of land, that support more logical and efficient management.

GOAL 13.3 Provide the land manager, public users, and neighbors with legally defensible administrative records and readily visible property boundary lines. Locate and maintain such lines on the ground, and accurately depict the location on administrative maps and in geographic information system databases.

Objective 13.3.A. Bring boundary line demarcation and maintenance to standard.

Objective 13.3.B. Establish and follow a maintenance schedule that provides visible Forest boundaries for users and neighbors.

GOAL 13.4 Special use authorizations will go through the 36 CFR 251 screening process before making a decision to authorize the special use.

GOAL 13.5 Protect and defend federal interests in, and title to, land.

Objective 13.5.A. Provide legal land surveys and related services to locate, mark, post, and maintain land corners, property corners, and property lines between forest land and other ownerships for the protection and management of federal lands and resources.

Objective 13.5.B. Resolve a majority of existing land claims, title deficiencies, and trespasses; give priority to cases of unauthorized occupancy on Forest land.

Communication, Interpretation, and Education

GOAL 14 **Engage the public and other agencies in cooperative, collaborative efforts that build trust and support in helping to meet Desired Future Conditions.**

GOAL 14.1 **Build trust and credibility for the Forest's programs and mission by forging connections between people and their natural and cultural heritage.**

GOAL 15 **Provide interpretive and educational services to a wide spectrum of the public, including visitors, school children, interest groups, and civic organizations.**

GOAL 15.1 **Enhance public awareness of, and appreciation for, the Forest's natural and heritage resources and their management, to foster their wise use and conservation.**

Objective 15.1.A. Develop an inventory of interpretive opportunities and facilities within two years.

Objective 15.1.B. Develop a strategy for interpretation and education within two years.

GOAL 15.2 **Develop and provide a wide range of interpretive media to enhance visitor experiences.**

GOAL 15.3 **Provide Forest audiences with the foundation of knowledge and information needed to become informed participants in public lands resource management.**

GOAL 15.4 **Encourage cooperation and partnerships with individuals, non-profit organizations, other agencies, special interest groups, clubs, tribal nations, and others to achieve the Forest's interpretive and educational mission.**

Rural Community Assistance

GOAL 16 **Improve delivery of assistance to rural communities.**

GOAL 16.1 **Provide or facilitate technical and financial assistance to rural communities that are dependent on Forest-generated commerce and natural resources.**

GOAL 16.2 **Help rural communities develop and implement natural resource solutions to economic, environmental, and social problems.**

FORESTWIDE STANDARDS

Standards generally preclude or impose limitations on resource management activities and uses; they are within the authority and ability of the Forest Service to enforce. Their purpose is to aid in the achievement of Goals and Objectives and to provide for necessary levels of environmental protection or public safety. Standards are measurable and capable of being monitored. Adherence to standards is mandatory. A project that deviates from a relevant Standard may not be authorized unless the Forest Plan is amended to modify, remove, or waive application of the Standard.

In addition to Forest Plan Standards, the DBNF is required to follow all relevant laws and regulations. Forest Service manuals and handbooks also provide direction.

Standards for several resources are covered under other categories or under specific prescription areas. For example, water related standards can be found in each of the following categories and in the Riparian Corridor and Source Water Prescription Areas.

LAND

DB-LAND-1. Management activities, other than those required responding to emergency or other urgent resource protection needs, will not occur in new acquisitions until an appropriate Prescription Area(s) is assigned.

DB-LAND-2. Evaluate special-use proposals/applications to determine if they are in the public interest. Proposals/applications must:

a) Be consistent with Prescription Area Objectives, Standards, and Desired Future Conditions

b) Be consistent with other federal, state, and local statutes and regulations

c) Not be permitted on DBNF land if they can be reasonably accommodated on private land, even if those locations are more expensive for the applicant.

DB-LAND-3. Prior to issuing new or re-issuing existing well/spring permits or diversions of water from streams or lakes, determine the in-stream flow or lake levels necessary to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values.

MINERALS

DB-MIN-1. All proposed surface-disturbing activities must have an approved operating plan, reclamation plan, and appropriate state and federal permits before the activity begins.

DB-MIN-2. Within 200 feet of any cave openings associated with karst systems: the surface is not to be disturbed during any federal mineral exploration or development activity; development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

DB-MIN-3. No drilling or mining is allowed into known cave voids (systems) where federal leasing is authorized.

DB-MIN-4. New federal mineral leases must contain a controlled-surface-use stipulation for the scoured ephemeral stream zone.

ROADS/ENGINEERING

DB-ENG-1. Subject to valid existing rights, no new roads, or trails will be built or maintained in protected zones around cave openings, associated sinkholes, or cave collapse areas, except for designated recreational caves.

DB-ENG-2. Do not use open-top culverts, e.g., wooden box or pole culverts.

DB-ENG-3. Locate fords only where bottom and biological conditions will support the designed use. Maintain stream channel contour and grade when modifying a crossing.

DB-ENG-4. Restrict motorized vehicle use in the scoured ephemeral stream zone to designated sites.

DB-ENG-5. When culverts are removed, restore stream banks and channels to a natural size and shape. Stabilize disturbed areas.

RECREATION

DB-REC-1. Recreational activities inside caves will not be promoted except for designated recreational caves. Public information concerning location and access to non-recreational caves will be limited.

DB-REC-2. Except for administrative purposes, motorized vehicles will be allowed only on designated trails.

DB-REC-3. The Secretary of Interior's Standards for Archeology and Historic Preservation will be the governing principles for archaeological and historic preservation activities and methods on the DBNF.

DB-REC-4. Authorizations for new recreation residence lots will not be issued unless they are issued as an in lieu lot within an existing tract.

DB-REC-5. Recreation residence use will be reviewed prior to expiration of the existing authorization and will only be renewed if such use is in compliance with the existing permit.

DB-REC-6. Development of any new areas for bouldering or any improvement of existing bouldering area that may substantially increase its use for bouldering must receive Forest Service approval prior to development. Activities that constitute development include, but are not limited to:

a) Permanent installation of safety devices such as bolts, straps, cam devices, or chocks
b) Construction of access trails
c) Clearing of vegetation

DB-REC-7. Allow no new designated OHV, horse, or bicycle trails within the scoured ephemeral stream zone except at designated crossings or where the trail location requires some encroachment, for example, to accommodate steep terrain.

WILDLIFE

DB-WLF-1. No snags equal to or greater than six inches in diameter at breast height (dbh) and equal to or greater than 10 feet in height are to be intentionally felled within timber harvest, regeneration, and thinning projects, unless identified as an immediate threat to human safety. This standard does not apply to salvage or sanitation projects.

DB-WLF-2. Retain or create at least three snags per acre equal to or greater than 9 inches dbh within all timber harvest, regeneration, sanitation, salvage, or thinning project units when available.

DB-WLF-3. Retain enough live trees to provide partial shading of about one-third of all snags equal to or greater than 12 inches dbh and equal to or greater than 10 feet in height that are suitable for roosting by Indiana bats.

DB-WLF-4. In the two-aged shelterwood method, retain a minimum of 10 to 15 square feet of basal area per acre (average in stand) of live potential roost trees (Indiana bat).

DB-WLF-5. In harvest units equal to or greater than 10 acres that prescribe the two-age or even-age systems, leave some clumps or strips averaging at least 50 square feet of basal area (of trees equal to or greater than 9 inch dbh) per acre, or the density of the original stand if less. "Leave areas" such as the Cliffline Community and Riparian Corridor Prescription Areas can provide this habitat based on site-specific conditions.

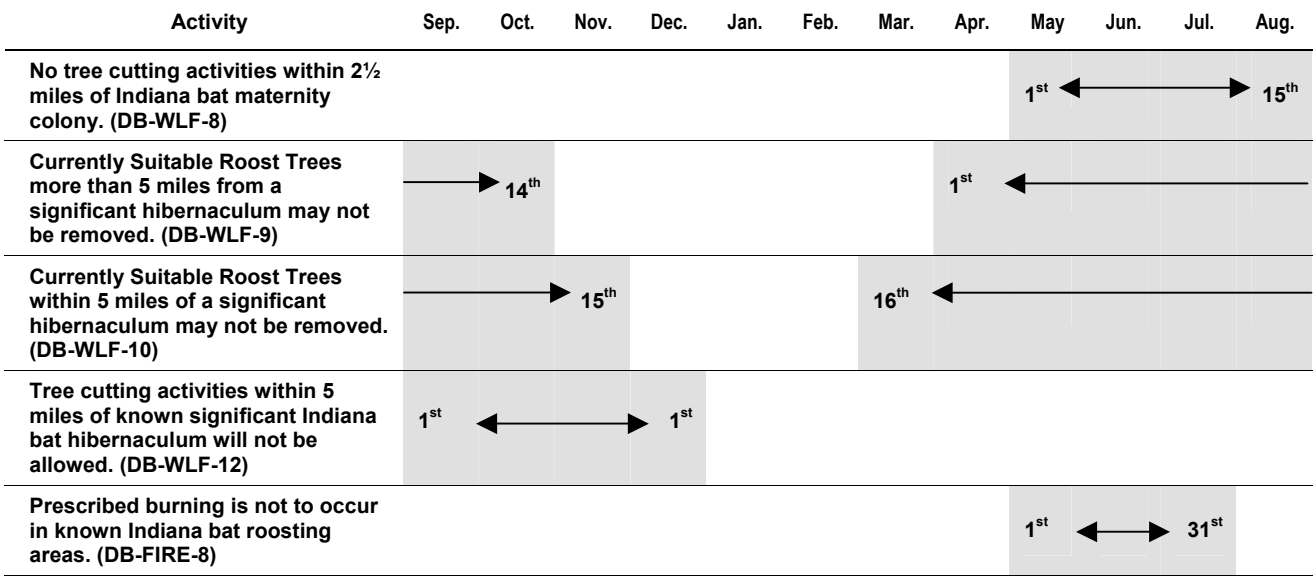
DB-WLF-6. In regeneration or thinning project areas, retain all shagbark, shellbark, and red hickories that are (equal to or greater than 6 inch dbh), unless the removal of these trees is specifically designed to improve habitat for PETS or Conservation species.

DB-WLF-7. During implementation of vegetation management, retain any immediate roost trees (Indiana bat) that are equal to or greater than 6 inches dbh. These trees must be designated prior to project implementation. This standard does not apply to salvage or sanitation projects.

DB-WLF-8. Tree cutting may not be conducted within 2.5 miles of any Indiana bat maternity colony from May 1 through August 15. (See Table 2 - 1)

DB-WLF-9. For non-vegetation management projects, currently suitable Indiana bat roost trees may be felled only from October 15 through March 31, if they are more than five miles from a significant bat caves (Indiana bat). If tree removal occurs at other times, the trees must be evaluated for current Indiana bat use, according to U.S. Fish and Wildlife Service protocol. (See Table 2 - 1)

Table 2 - 1. Summary of dates for restricted activities around Indiana bat habitat.



DB-WLF-10. For non-vegetation management projects, removal of currently suitable roost trees (Indiana bat) within five miles of a significant bat cave (Indiana bat) may occur only from November 16 through March 15. If removal occurs at other times, the trees must be evaluated for current Indiana bat use, according to U.S. Fish and Wildlife Service protocol. (See Table 2 - 1)

DB-WLF-11. Timber harvest will not occur on the DBNF within one mile of a known significant bat cave, or PETS bat staging cave (with the exception of the wooded grassland/shrubland habitat association), if this activity would result in more than 120 acres of forest less than 10 years of age on all ownerships (public and private).

DB-WLF-12. Within five miles of a significant Indiana bat hibernaculum, tree cutting is not to be conducted from September 1 through December 1. (See Table 2 - 1)

DB-WLF-13. Where caves exist outside Cliffline Community Prescription Area a minimum zone of 200 feet is to be maintained around openings to caves and mines suitable for supporting cave-associated species, as well as any associated sinkholes and cave collapse areas, except for designated recreational caves. Prohibited activities within this protective area include use of motorized wheeled or tracked equipment (except on existing roads and trails), mechanical site preparation, recreation site construction, tractor-constructed fire lines for prescribed fire, herbicide application, and construction of new roads, skid trails, or log landings. Vegetation in this buffer zone may be managed only to improve habitat for PETS or Conservation species.

DB-WLF-14. Activities that create a toxic water source (e.g. brine pits and oil catch basins) must be filled, covered, or otherwise modified in an environmentally appropriate manner to prevent contact with wildlife.

DB-WLF-15. Create, or retain where available, at least one snag 12 inches dbh or greater per acre in any area in which overstory trees are cut as part of habitat creation or maintenance, sanitation or salvage.

VEGETATION

DB-VEG-1. Hazard trees (dead or alive) considered to be an immediate threat to human safety may be removed anytime. This supercedes all other standards.

DB-VEG-2. Chopping, shearing, or soil scarification is not to be prescribed on sustained slopes greater than 35 percent or on slopes greater than 20 percent with highly erodible or failure-prone soils. Mowing (e.g., shredder, Hydro Axe,) may occur on any slope where the equipment can be operated safely.

DB-VEG-3. Logging or site preparation equipment, rubber-tired or tracked, is not to be used on plastic soils when the water table is within 12 inches of the surface or when soil moisture exceeds the plastic limit. Soil moisture exceeds the plastic limit if the soil can be rolled to pencil size (approximately ¼ -inch diameter and 6 inches long) without breaking or crumbling.

DB-VEG-4. Equipment used for site preparation must be operated so that furrows and soil indentations are aligned on the contour (with grades less than 5 percent).

DB-VEG-5. Determine location and designate landings and skid roads prior to beginning of operations in each unit.

DB-VEG-6. Do not permit use of stream channels for skid roads or trails.

DB-VEG-7. No class B, C, or D chemical (See Table 2 - 2) is to be used on any project, except with Regional Forester approval. Herbicides listed in the table below may be used only for the treatment methods shown.

Table 2 - 2. Classification of chemical/method combinations.

TREATMENT METHOD	CLASS A	CLASS B	CLASS C	CLASS D
Manual ground:				
Cut surface	DIC, GLY, IMZ, PIC, TRA	None	None	None
Basal stem	DES, KER, LIM, TRE	None	None	None
Soil spot	HEX	TEB	None	None
Foliar spray	FOS, GLY, HEX, IMZ, KER, LIM, PIC, SMM, TRA, TRE	None	TEB	None
Mechanical ground:	DES, DIC, FOS, GLY, HEX, IMZ, PIC, SMM, TRA, TRE	TEB	None	None

KEY:
DIC = Dicamba
DES = Diesel
FOS = Fosamine
GLY = Glyphosate
HEX = Hexazinone
IMZ = Imazapyr
KER = Kerosene
LIM = Limonene
PIC = Picloram
SMM = Sulfometuron Methyl
TEB = Tebuthiuron
TRA = Triclopyr Amine
TRE = Triclopyr Ester

DB-VEG-8. Herbicides will be applied at the lowest rate effective in meeting project objectives and according to guidelines for protecting human[7] and wildlife health[8]. Application rate and work time must not exceed levels that pose an unacceptable level of risk to human or wildlife health. The USDA Forest Service, Southern Region standard for acceptable level of risk requires a Margin of Safety (MOS) > 100 or, Hazard quotient (HQ) < 1.0.

DB-VEG-9. Monitor weather and suspend project if temperature, humidity, or wind becomes unfavorable according to the criteria below:

Ground:	Temperatures Higher Than (°F)	Humidity Less Than (%)	Wind (at Target) Greater Than (MPH)
Hand (cut surface)	n/a	n/a	n/a
Hand (other)	98	20	15
Mechanical (liquid)	95	30	10
Mechanical (granular)	n/a	n/a	10

DB-VEG-10. Use only nozzles that produce large droplets (mean droplet size of 50 microns or greater) or streams of herbicide. Nozzles that produce fine droplets may be used only for hand treatment, where distance from nozzle to target does not exceed eight feet.

DB-VEG-11. Areas treated with herbicides are to be clearly posted with notice signs to warn visitors of the treatment.

DB-VEG-12. No herbicide is to be applied aerially.

DB-VEG-13. No soil-active herbicide will be applied within 30 feet of the dripline of non-target vegetation specifically designated for retention (e.g., den trees, hardwood inclusions, adjacent stands) within or next to treated area.

DB-VEG-14. Do not apply triclopyr within 60 feet of known occupied gray, Virginia big-eared, or Indiana bat hibernacula or known maternity tree.

DB-VEG-15. Do not apply 2,4-D or 2,4-DP.

DB-VEG-16. No broadcast treatment using herbicide is to be made within 60 feet of any known PETS plant species.

DB-VEG-17. No soil-active herbicide is to be applied within 60 feet of any known PETS plant species.

DB-VEG-18. Application equipment, empty herbicide containers, clothing worn during treatment, and skin are not to be cleaned in open water or wells. Mixing and cleaning water must come from a public water supply and be transported in separate, labeled containers.

DB-VEG-19. No herbicide shall be applied within 30 horizontal feet of lakes, wetlands, perennial or intermittent springs (seeps) and streams. However, herbicides approved for aquatic use may be used when such treatment is required to control invasive plants.

[7] NRC 1983

[8] EPA 1986

DB-VEG-20. Necessary buffer zone areas must be designated before making herbicide treatments so applicators can easily recognize and avoid the buffer area.

DB-VEG-21. Herbicide mixing, loading, or cleaning areas in the field are not to be located within 200 feet of private land, open water or wells, or other sensitive areas.

DB-VEG-22. The maximum size of a temporary opening created by even-aged or two-aged regeneration treatments is 40 acres. These acreage limits do not apply to areas treated as a result of catastrophic conditions such as wildland fire, insect outbreak, or windstorm. Areas managed as woodland, wooded grassland/shrubland, or non-forested areas (e.g., rights-of-way and grassy openings) are not subject to these Standards and are not included in calculations of opening size, even when within or adjacent to created openings.

DB-VEG-23. Temporary openings created by even-aged or two-aged regeneration treatments will be separated from each other by a minimum of 330 feet. Such openings may be clustered closer than 330 feet as long as their combined acreage does not exceed the maximum opening size. An even-aged or two-aged regeneration area will no longer be considered an opening when the certified re-established stand has reached an age of five years.

DB-VEG-24. Regeneration cuts on lands suitable for timber production must be done only where adequate stocking of desirable species (based on management objectives) is expected to occur within five years after the final cut. In two-aged systems, the final cut is the establishment cut which leaves a residual overstory. The newly established regeneration must meet the minimum stocking levels as described in Table 2 - 3. This Standard applies to both artificial and natural means of stand regeneration and applies to all silvicultural systems.

Table 2 - 3. Minimum Seedling Restocking Standards for the DBNF.

Management Type	Minimum Trees per Acre
Yellow Pine or Y. Pine-hardwood	300
Hardwood, White Pine, and others	150

DB-VEG-25. Within a *possible* old-growth stand, do not initiate management that could alter the stand's potential status as old-growth until the stand has been inventoried for old-growth criteria[9] and its status determined.

DB-VEG-26. No more than 10 percent of a harvest area should be in landings, skid roads, or exposed soil.

[9]*Possible* old-growth is an area, within any Prescription Area, that has a high probability of being old-growth based on its community type and stand age (USDA Forest Service 1997). Identification of a stand as *possible* old-growth or old-growth implies no land management decision. This standard is intended to address *possible* old-growth stands outside the 1.I. Designated Old-Growth Prescription Area, which was designed to promote, enhance, and maintain old-growth communities and attributes. See Glossary and FEIS for further clarification.

DB-VEG-27. Resource management activities that may affect soil and/or water quality must follow applicable Kentucky Rules and Regulations for Water Quality Control and Kentucky's Best Management Practices for Forestry[10] (BMPs) as a minimum to achieve soil and water quality objectives. When Forest Plan standards exceed Kentucky BMPs or water quality standards, Forest Plan standards shall take precedence.

DB-VEG-28. Within the scoured ephemeral stream zone, a minimum of 15 square feet of basal area will be left following silvicultural activities.

DB-VEG-29. The removal of coarse woody debris from within the scoured ephemeral stream zone will be allowed only if it poses a risk to public safety or water quality, degrades habitat for aquatic or riparian-associated species, or when it poses a threat to private property or Forest Service infrastructures.

DB-VEG-30. No herbicide may be broadcast within 100 feet of private land or 300 feet of a private residence, unless the landowner agrees to closer treatment.

DB-VEG-31. Commercial moss collection is prohibited.

DB-VEG-32. Collection of non-timber forest products is not allowed, except for scientific purposes, in the following Prescription Areas: RNAs (existing and proposed), Rare Communities, Designated Old-Growth, Developed Recreation, Natural Arch Scenic Area, Red River National Wild River Segment, or the Proposed Marsh Creek Wild River Segment. (Also see vegetation standards in Prescription Areas 2.A and 2.B.)

PRESCRIBED AND WILDLAND FIRE

DB-FIRE-1. Slash burns are to be prescribed so they do not consume all litter and duff and alter structure and color of mineral soil on more than 20 percent of the burn area.

DB-FIRE-2. Do not conduct a prescribed burn in an area where more than half of the soils are severely erodible with an average of less than one-half inch of litter and duff.

DB-FIRE-3. Conduct all DBNF management activities (including activities that require permits) in a manner that does not result in a contribution to a violation of National Ambient Air Quality Standards or a violation of applicable provisions in the State Implementation Plan.

DB-FIRE-4. Prior to construction, survey the locations of prescribed fire control lines for heritage resources.

DB-FIRE-5. Survey wildland fire control lines for heritage resources as soon as possible after their construction.

DB-FIRE-6. Stabilize all wildland fire control lines as soon as possible following their use.

DB-FIRE-7. Conduct no prescribed burns in areas treated with herbicides until at least 30 days after an herbicide treatment.

DB-FIRE-8. Prescribed burning is not to occur within known Indiana bat roosting areas from May 1 through July 31 (See Table 2 - 1).

[10] Stringer and Perkins 1997

Visitors to Red River Gorge receive guidance from a Forest Service employee.

Chapter 3

PRESCRIPTION AREAS

Introduction

A Prescription Area is an allocation of one or more parcels of land within which resource conditions and corresponding management emphasis are similar. Some Prescription Areas describe previous designations; others address current issues and new management emphases.

An alphanumeric system is used to help identify the Prescription Areas. Sequential gaps that occur within the system represent Prescription Areas that were proposed only within Plan Alternatives and not incorporated into this document.

Prescription Area descriptions include:

- Setting (including physical description)
- Desired Future Condition
  - Emphasis of Condition
  - Desired Ecosystem Condition
  - Desired Facilities and Human Activities
- Goals and Objectives
- Standards

Regardless of Prescription Area, Forestwide Goals and Objectives apply, and adherence to Forestwide Standards is mandatory *unless* a prescription-specific Goal, Objective, or Standard supersedes Forestwide Direction. In some cases, Prescription Areas overlap. If Goals and Objectives conflict, a determination of appropriate Desired Future Condition will be made site-specifically. However, the most restrictive Standards must be followed.

The suitability for timber production of each Prescription Area is identified under the "Setting" heading of each Prescription Area. The four classifications used are:

- Unsuitable for Timber Production – Timber harvest not allowed.
- Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.
- Suitable for Timber Production (Scheduled Harvest) – Non-timber emphasis.
- Suitable for Timber Production (Scheduled Harvest) – Timber emphasis.

PRESCRIPTION AREA DESCRIPTIONS

1.A. ROCK CREEK RESEARCH NATURAL AREA; TIGHT HOLLOW, AND RIGHT FORK OF ELISHA CREEK PROPOSED RESEARCH NATURAL AREAS

Setting

This Prescription Area contains 189 acres within the Upper Cumberland River Management Area. Rock Creek Research Natural Area (RNA) is a more or less, cliff-bound valley located on the Rock Creek tributary of the Rockcastle River in southwestern Laurel County. It is located on the London Ranger District. The addition of 469 acres is proposed with the Middle and Upper Kentucky River Management Areas. Tight Hollow is a cliff bound valley located on the Tight Hollow Creek tributary of Mill Creek in southeastern Wolfe County. It is located on the Stanton Ranger District. Right Fork of Elisha Creek is located in the headwaters of the Right Fork of Elisha Creek, a tributary of the Redbird River in west central Leslie County. It is located on the Redbird Ranger District. See the map of Research Natural Areas in Appendix G for an approximate location.

This Prescription Area is classified as Unsuitable for Timber Production – Timber harvest not allowed.

Desired Future Condition

Emphasis of Condition: A Research Natural Area (RNA) is an "ecological area designated in perpetuity for research and education and/or to maintain biological diversity on National Forest System lands. Research natural areas are "for non-manipulative research, observation, and study." The Vegetation Management and Protection Research Work Unit of the Southern Forest Experiment Station manages designated areas to maintain biological diversity, conduct non-manipulative research and monitoring, and foster education. Proposed RNAs will be managed by the DBNF until they receive designation.

Desired Ecosystem Condition: Rock Creek RNA, established in 1939, is characterized by late-successional or old-growth hemlock and mixed mesophytic forest, with dense rhododendrons along streamsides, large trees, and few forest openings. Rock Creek RNA was also registered as a National Natural Landmark in 1974. Rock Creek RNA has an individual management plan giving specific direction for its Desired Future Condition.

Tight Hollow and Right Fork of Elisha Creek proposed RNAs are currently characterized by mid- to late-successional xeric to mesic forests comprised of upland oak and yellow pine, hemlock and mixed mesophytic forest types. Stands of old-growth are found in these areas. Natural tree gap openings are also present.

All three areas will be moving toward old-growth conditions because of the lack of vegetation management such as tree cutting. Since fire is seldom present in the Rock Creek RNA, upland species such as shortleaf and pitch pines as well as scarlet and chestnut oaks gradually succeed to shade-tolerant species across the majority of the landscape. Snags, natural openings, and large

woody fuels are common. Depending on the research plan, fire may be present in some portions of the proposed Research Natural Areas.

Facilities and Human Activities: Roads, trails, or other facilities are not normally found in these areas. Hunting and cross-country hiking may occasionally occur but recreation is not encouraged.

No designated trails occur in the Rock Creek Research Natural Area. Research, when approved by the Southern Research Station, will be non-manipulative. Other activities may include installation of markers for re-measurement of vegetation growth, or other non-destructive sampling. Invasive non-native plants may be controlled. Prescribed fire is not allowed in the Rock Creek RNA and the area is protected from wildland fire.

Designated trails occur in Tight Hollow and Right Fork of Elisha Creek if approved as RNAs only if permitted by the respective management plans. Research, when approved by the Southern Research Station, generally will be non-manipulative. Other activities may include installation of markers for re-measurement of vegetation growth, or other non-destructive sampling. Invasive non-native plants may be controlled. Prescribed fire *may* be allowed in the Tight Hollow and Elisha Creek areas if selected as RNA, based on the respective management plans. The areas are protected from wildland fire.

Goals and Objectives

1.A-Goal 1. Follow direction of and cooperate with the Southern Forest Experiment Station in management of these areas.

1.A-Objective 1.A. Management objectives for these areas will be determined by the Southern Forest Experiment Station. The management of Tight Hollow and Right Fork of Elisha Creek proposed Research Natural Areas would be the responsibility of the DBNF until they are designated by the Forest Service Chief to be Research Natural Areas. These two areas are to be managed to retain the values that qualify them to be nominated as Research Natural Areas.

1.A-Objective 1.B. The Recreation Opportunity Spectrum objective is Semi-primitive Non-motorized.

1.A-Objective 1.C. Reroute existing trails outside of the Research Natural Area, unless approved by the management plan.

Standards

LANDS

1.A-LAND-1. If Tight Hollow or Right Fork of Elisha Creek is designated as Research Natural Areas, they will remain in this prescription and be managed accordingly.

1.A-LAND-2. If the Tight Hollow Proposed Research Natural Area is not designated, its land base will be allocated into Prescription Area 3.E., Red River Gorge Geologic Area and National Natural Landmark.

1.A-LAND-3. If the Right Fork of Elisha Creek Proposed Research Natural Area is not designated a special area, its stands will be inventoried and allocated into Prescription Area 1.I., Designated Old-Growth.

MINERALS

1.A-MIN-1. The surface is not to be disturbed during any federal mineral exploration or development activity; development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

1.A-MIN-2. No extraction permits will be issued for common variety minerals, e.g., sand and gravel.

WILDLIFE

1.A-WLF-1. Wildlife improvements must conform to the Research Natural Area management plan.

VEGETATION

1.A-VEG-1. Collection of non-timber forest products is not allowed, except for scientific purposes

1.A-VEG-2. Silvicultural activities must conform to the Research Natural Area management plan.

PRESCRIBED FIRE

1.A-FIRE-1. Prescribed fire control lines must be designed and maintained as directed by the Research Natural Area management plan.

1.C. CLIFFLINE COMMUNITY

Setting

A cliffline community is the area between 100-feet slope-distance from the top and 200-feet slope-distance from the dripline of a cliffline. A cliffline is a naturally occurring, exposed, and nearly vertical rock structure at least 10 feet tall and 100 feet long. A cliffline is continuous if segments are separated by no more than 300 feet. Wherever the described conditions are found, those sites will be included in this Prescription Area.

This Prescription Area, found in all Management Areas, is currently estimated at approximately 111,200 acres across the DBNF.

This Prescription Area is classified as Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

Emphasis of Condition: This area is managed to protect, maintain, or enhance habitat conditions for cliffline associated PETS and Conservation species. Sandstone and/or limestone rock form most of the clifflines on the DBNF.

Microclimate conditions, primarily the temperature and humidity associated with this landscape feature, persist. Overstory trees within this Prescription Area are generally old and usually replaced by natural processes. The forest community within this area varies a great deal because clifflines may occur anywhere on the forest ranging from low elevation streamside areas and higher elevation ridgetops.

Desired Ecosystem Condition: This area is managed to maintain its unique ecosystem and to support habitat for viable populations of the flora and fauna that are cliffline associated. Clifflines also function as travelways for many forest species and serve to maintain connectivity between other habitat areas. This ecosystem contains diverse transition zones, from dry to xeric above the cliff, to mesic or riparian communities below. Old trees are often found both above and below clifflines. Depending on the specific location, these trees may be fairly widely scattered or heavily stocked. Prescribed fire is allowed in this area and trees may show occasional scorch marks. Non-native, invasive species do not occur within the Cliffline Community Prescription Area.

Dry to xeric forest communities above clifflines are dominated by yellow pine and oak forest types on sandstone cliffs and a mixture of oaks, other hardwoods, and redcedar on limestone cliffs. Below sandstone cliffs, in sheltered areas, such as east or north facing slopes, large hemlock and yellow-poplar trees may dominate the overstory vegetation. More exposed areas facing south and west below sandstone cliffs may be dominated by mixed oak and other hardwoods or by mixed oak and yellow pines. Below limestone cliffs, oaks tend to dominate the forest, however, in more sheltered areas, large sugar maples, yellow-poplars, hemlocks and yellow buckeyes may dominate.

Clifflines often have seasonal, or ephemeral, wet driplines containing both flora and fauna that require such environments. Cave openings and rockshelters are common in this area. Many species of bats and other small animals inhabit dark areas and caves at various points along these cliffs. In

the Red River Gorge Geological Area, white-haired goldenrod may be found in rockshelters along the base of clifflines.

Desired Facilities and Human Activities: Where PETS species, habitat for Conservation species, and heritage resources are adequately protected, an occasional trail or stairway may allow access across clifflines. The rich heritage resources occurring here are evaluated and protected, but institutional research is authorized only by written agreement. Dispersed recreation (e.g., hiking, rock climbing, rappelling, bouldering, and camping) is generally allowed, unless adverse impacts to PETS species, habitat for Conservation species, or heritage resources listed or potentially eligible for listing on the National Register of Historic Places, cannot be mitigated.

Goals and Objectives

1.C-Goal 1. Maintain the physical and microclimate conditions so that habitat for species within this uniquely important ecosystem persists on the Forest over the planning period. Manage clifflines to maintain their ecosystems, thereby protecting habitat for flora and fauna that require these ecosystems.

1.C-Objective 1.A. Develop a comprehensive, Forestwide plan for managing cliffline-related recreational activities.

1.C-Goal 2. Bring about the delisting of white-haired goldenrod.

1.C-Objective 2.A. Complete recovery plan recommendations relating to white-haired goldenrod sites.

1.C-Objective 2.B. Participate in the delisting procedure for white-haired goldenrod.

1.C-Goal 3. Manage clifflines, including rockshelters, to protect and allow study of the rich archaeological deposits frequently found in this area. Respect Native American values and protect traditional heritage properties whenever possible.

1.C-Objective 3.A. Initiate a site-stabilization program for known archaeological sites, in consultation with the State Historic Preservation Officer and interested federally recognized tribes.

1.C-Objective 3.B. Initiate a data recovery plan for significant archaeological sites that cannot be adequately protected.

Standards

MINERALS

1.C-MIN-1. In the area above the cliffline, the surface is not to be disturbed during any federal mineral exploration or development activity; development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation. In the area below the cliffline, surface occupancy is authorized only when these activities will not negatively impact PETS species, habitat for Conservation species, or heritage resources listed or potentially eligible for listing on the National Register of Historic Places; in addition, development of federally owned oil and gas is subject to the controlled surface use stipulation.

ROADS/ENGINEERING

1.C-ENG-1. Subject to valid existing rights, new roads or rights-of-way will not be permitted in the cliffline zone, if they are likely to negatively impact PETS species, habitat for Conservation species, or heritage resources listed or potentially eligible for listing on the National Register of Historic Places.

RECREATION

1.C-REC-1. New recreation facilities will not be permitted in the cliffline zone if they are determined to negatively impact heritage resources listed or potentially eligible for listing on the National Register of Historic Places.

1.C-REC-2. Any new areas developed for cliffline related recreation activities, e.g. rock climbing, bouldering, or rappelling, must receive Forest Service authorization prior to development. Improvements to existing developments that may substantially increase use of a cliffline related area must also receive prior authorization from the Forest Service. Activities that constitute development include, but are not limited to:

a) Permanent installation of safety devices such as bolts, straps, cam devices, or chocks
b) Construction of access trails
c) Clearing of vegetation

1.C-REC-3. Camping is not permitted within 100 feet of the base of any cliff or the back of any rockshelter, unless at a designated site.

1.C-REC-4. No campfire or stove fire is permitted within 100 feet of the base of a cliff or the back of any rockshelter, unless at a designated site.

1.C-REC-5. Areas will be managed to meet or exceed the Recreation Opportunity Spectrum experiences defined as semi-primitive non-motorized, semi-primitive motorized, and roaded natural.

WILDLIFE

1.C-WLF-1. Permit site-specific vegetative manipulation only when its purpose and need is to improve or sustain habitat for PETS species or habitat for Conservation species.

1.C-WLF-2. Management activities will not concentrate public use in the vicinity of clifflines, if such is detrimental to PETS species or habitat for Conservation species.

1.C-WLF-3. Protect peregrine falcon aerie (nesting) sites from human disturbance between February 1 and June 30. Determine size of these protection areas, based on terrain and activities known to occur near the nest site, in consultation with the Kentucky Department of Fish and Wildlife Resources.

VEGETATION MANAGEMENT

1.C-VEG-1. Allow harvest of wood products only as an output in pursuing other resource objectives.

1.C-VEG-2. When timber is harvested, heavy equipment such as skidders or yarders are not to be allowed in this area. Cable logging corridors may cross this area when cable operations are necessary for the management of the cliffline or adjacent Prescription Areas, only when no other reasonable access is available. Logs may be end-lined or cabled from or through this area.

1.C-VEG-3. Collection of non-timber forest products within 50 feet of a cliffline is subject to the following restrictions:

a) Personal use moss collection is prohibited.

b) Collection of other species within this zone is limited to those species that cannot be feasibly collected elsewhere (e.g., no collection of mountain laurel is allowed within cliffline areas because it can be collected on other upland or midslope sites.)

c) For ground disturbing activities (transplants, root digging, etc.) a maximum of 10 plants will be allowed per permit, with no more than two permits sold to an individual per year.

d) Non-destructive activities (seed collection, cuttings, etc.) are allowed for all species unless otherwise prohibited.

1.E. RIPARIAN CORRIDOR

Setting

The Riparian Corridor Prescription Area encompasses riparian areas, as well as adjacent associated upland components. A riparian area is functionally defined as a three-dimensional ecotone of interaction that includes both terrestrial and aquatic ecosystems. It is identified on the ground as one of the following: a perennial stream or other perennial water body (with the exception of artificial upland ponds and the Large Reservoirs Prescription Area), or intermittent stream, as well as the associated soils, vegetation and hydrology. It extends down into the ground water, up above the canopy, outward across the flood plain, up the near-slopes that drain into the water, laterally into the terrestrial ecosystem, and along the watercourse at a variable width (Ilhardt et al. 2000). Wetlands, springs and seeps may also be covered under the 1.G. Rare Community Prescription Area. See Figure 3 - 1 for a graphical representation of a Riparian Corridor.

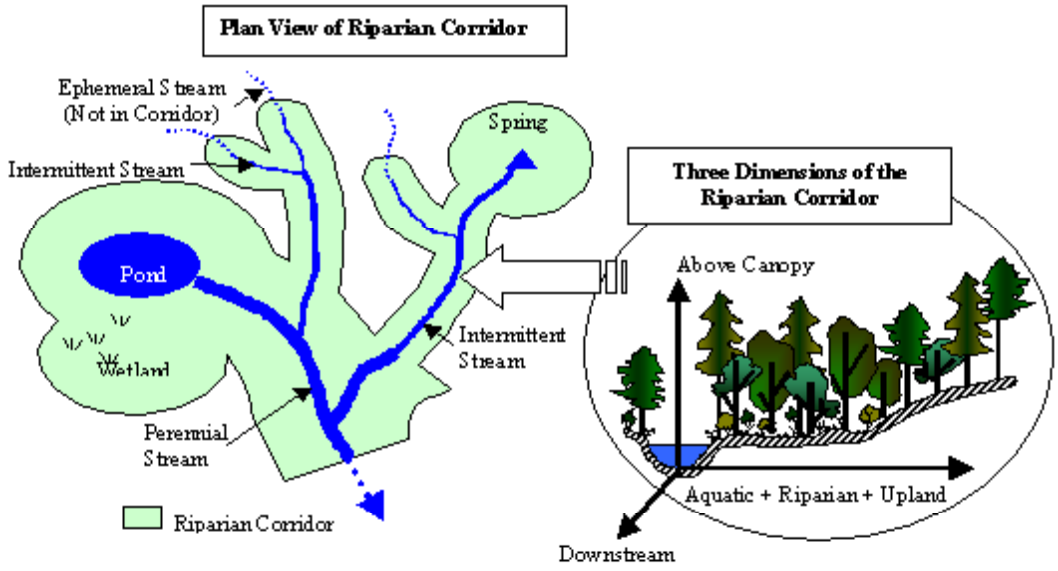


Figure 3 - 1. Simplified Representation of a Riparian Corridor.

The width of the Riparian Corridor varies but is always measured from the edge of the channel or bank. The Corridor encompasses, at a minimum, the 100-year flood plain or the distance listed in Table 3 - 1, whichever is greater. Beyond this Prescription Area, Kentucky's Best Management Practices for Forestry (Stringer and Perkins, 1997) are to be followed where applicable.

Table 3 - 1. Width of Riparian Corridor, measured from the edge of each bank.

	Distance from each bank, in feet (if greater than the 100-year flood plain)
Perennial streams and other perennial water bodies (excluding Large Reservoir PA)	100
Intermittent streams	50

An interrupted stream (a watercourse that goes underground and then reappears) will be measured as if the stream were above ground. For braided streams, the outermost braid will be used as the water's edge. For ponds, small lakes, wetlands (including associated seeps or springs), and other water bodies, the measurement begins at the ordinary high water mark.

Estimated acreages of the Riparian Prescription allocations are based on the 100-year flood plain and the widths described in Table 3 - 1. Riparian corridor widths are designed to encompass the riparian area defined on the basis of soils, vegetation and hydrology (the 100 year flood plain), and the ecological functions and values associated with the riparian area. The 100-year floodplain or the widths in Table 3 - 1 shall be used to define the Riparian Corridor.

Riparian corridor widths are designed to encompass the riparian area defined on the basis of soils, vegetation, and hydrology (the 100 year flood plain) as well as the ecological functions and values associated with the riparian area. The widths in Table 3 - 1 shall be used to define the Riparian Corridor.

This Prescription Area consists of 155,370 acres across all Management Areas. Approximately 2,757 acres are classified as Suitable for Timber Production (Scheduled Harvest) – Non-timber emphasis. The remainder of this Prescription Area is classified as Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

Emphasis of Condition: A riparian corridor is managed to retain, restore, and/or enhance the inherent ecological processes and functions of the associated aquatic, riparian, and upland components. Primarily, only natural processes (floods, erosion, seasonal fluctuations, etc.) modify the landscape and resources within the area.

Desired Ecosystem Conditions: The biological integrity of the aquatic community is maintained with a species composition, diversity, and functional organization similar to that of the natural habitat of the region. While native aquatic biodiversity is of main concern, exceptions can be established for desired non-native sport fish species, but not to the detriment of native species.

Suitable habitat is available for aquatic or riparian-associated species. Numerous large trees in a relatively continuous forest cover, diverse vegetation, and a variety of wildlife generally characterize the riparian forest. Wet meadows and other non-forest communities or open forest may occasionally occur where flooding, wind damage, wildland fire, restoration, and/or vegetation management activities have left signs of disturbance. Much of the older riparian forest contains multiple canopy layers, providing a variety of habitat niches and wildlife cover. Snags are abundant and are utilized by a wide variety of species. Dying and down trees, often in small patches, are not uncommon. Other old-growth conditions may exist. Non-native invasive species are not found in this area.

Water quality remains within a range that ensures survival, growth, reproduction, and migration of aquatic or riparian-associated species; and maintains the biological and chemical integrity of aquatic ecosystems. Stream sediment loads are elevated only during and immediately following heavy rainfall.

The physical integrity of aquatic systems -- including stream banks, substrate, and other physical components of habitat -- is intact and stable. In-stream flows support habitat that is dependent upon the quantity and timing of flows for long-term sustainability. Flood plains properly function as detention/retention storage areas of floodwaters and sources of organic matter. Trees within the corridors are managed to provide sufficient amounts and sizes of woody debris to maintain habitat complexity and diversity for aquatic or riparian-associated species. Recruitment of woody debris typically occurs naturally; however, woody debris may be purposefully introduced to enhance aquatic and terrestrial habitat. Both in-stream and terrestrial woody debris are regarded as essential and generally left undisturbed. Modification of the flood plain or wetlands is infrequent but may be needed for protection of human life and property or for habitat or watershed restoration.

The riparian corridor functions as a passage way for aquatic and terrestrial organisms. Aquatic and terrestrial wildlife move along the corridor for daily travel as well as seasonal movement. The corridor also connects habitats and populations, facilitating the gene flow that supports genetically viable populations.

Desired Facilities and Human Activities: Management may take place to:

a) Provide terrestrial or aquatic habitat improvement
b) Favor recovery of native vegetation
c) Sustain or enhance aquatic or riparian-associated species
d) Control insect infestation and disease
e) Comply with legal requirements
f) Provide for public safety
g) Support other riparian functions and values.

Vegetation management, including a limited amount of logging, may occur when the purpose is to improve riparian function and values or where cable corridors are needed for adjacent Prescription Areas.

Prescribed fire is occasionally used within the corridor to establish or maintain fire-enhanced vegetative communities (e.g., canebrakes).

Many locations in this area are accessible for public enjoyment. Hiking, hunting, fishing, and wildlife viewing are typical of activities that occur in this area. Trails may occasionally cross or follow a stream. A few maintained fishing access points are found near roads.

Developed recreation areas and facilities are maintained or upgraded to be compatible with riparian values and do not adversely impact aquatic systems. If not, they are closed and restored to natural conditions. Few new roads are constructed within the Riparian Corridor. Roads, culverts, and bridges maintain the connectivity of the aquatic community and protect the aquatic environment. Construction is short term and maintains water flow and flood plain function.

Goals and Objectives

1.E-Goal 1. Restore and maintain native aquatic biodiversity.

1.E-Objective 1.A. Ensure stable or improving trends of aquatic macro-invertebrate assemblages (e.g., aquatic insects, mollusks, etc.).

1.E-Goal 2. Restore and maintain native species composition as well as the structural diversity of plant communities in riparian areas and wetlands. This goal seeks to provide habitat for numerous vascular and nonvascular plants, amphibians, birds, and mammals associated at least in part with riparian areas.

1.E-Objective 2.A. Perpetuate native riparian forest type groups such as conifer-northern hardwoods, mesophytic hardwoods, or the river flood plain hardwood and eastern river front types.

1.E-Objective 2.B. Maintain one to two percent of the riparian area in each 5th level watershed (all ownerships) in 0.25-1.0 acre permanent shrub-sapling openings with no canopy to provide habitat for American redstart, cerulean warbler, and additional habitat for beaver.

1.E-Objective 2.C. Maintain one to two percent of the riparian area in each 5th level watershed (all ownerships) in uneven-aged regeneration areas with a dense shrub-sapling component and openings no larger than one-quarter acre. These would be fixed areas no more than one-quarter mile along the stream to provide habitat for the Swainson's warbler, American redstart, and cerulean warbler.

1.E-Objective 2.D. In each Management Area, establish and maintain one to two percent of the riparian area along 4th order and larger streams (all ownerships) in canebrakes of up to ten acres. Existing openings will be used whenever possible. Approximately 50 percent will be in sparse overstory (<40 BA) trees. This objective seeks to restore cane to the riparian areas and provides habitat benefits for Swainson's warbler.

1.E-Objective 2.E. Develop and maintain at least 80 percent of existing hemlock-white pine forest type in a mature to old-growth (70+ age) condition with a thick shrub-sapling understory, without openings or roads. Louisiana waterthrush and sharp-shinned hawk are specifically targeted, the former for general habitat and the latter for breeding habitat.

1.E-Objective 2.F. Prevent, control, or eradicate populations of non-native invasive species.

1.E-Objective 2.G. Artificially created wetlands should be designed to function and appear as natural wetlands. New wetlands should benefit aquatic or riparian-associated species.

1.E-Objective 2.H. Maintain all butternut sites in a grassy or old-field condition absent of fescue to promote growth of individual trees and encourage reproduction.

1.E-Goal 3. Maintain and restore the water quality (biological and chemical integrity) necessary to support healthy riparian, aquatic, and wetland ecosystems, and to ensure survival, growth, reproduction, and migration of aquatic or riparian-associated species.

1.E-Objective 3.A. Concentrate restoration efforts in watersheds with impaired water bodies on Kentucky's Clean Water Act, Section 303(d) list or in watersheds that are a high priority for protection[11].

1.E-Objective 3.B. Reduce the number of impaired water bodies on Kentucky's Clean Water Act, Section 303(d), list that are located within the DBNF.

1.E-Goal 4. Maintain and restore the physical integrity of aquatic ecosystems, including stream banks, substrate, shorelines, coarse woody debris, riffles, and other components of this habitat.

1.E-Objective 4.A. Human activities should not cause water temperatures in cool- and cold-water streams to exceed their natural seasonal temperature ranges.

1.E-Goal 5. Restore and maintain a stable sediment regime that includes the timing, volume, rate, and character of sediment input, storage, and transport.

1.E-Objective-5.A. Sustain sedimentation rates that maintain or improve biological conditions. Measure rates using best available channel stability techniques.

1.E-Objective-5.B. Where feasible, new roads should be located outside the Riparian Corridor. If a road is located in the Riparian Corridor, construct to protect riparian functions and values.

1.E-Goal 6. Provide for unrestricted movement of aquatic fauna, except for existing approved dams.

1.E-Objective 6.A. Remove or reconstruct artificial structures that impede the movement of aquatic organisms.

1.E-Objective 6.B. Reduce or remove contaminants that impede the movement of aquatic organisms.

1.E-Objective 6.C. Inventory within two years all artificial structures in streams with PETS species. Each year improve, rehabilitate, or remove 20 percent of structures that adversely impact passage of aquatic organisms; give priority to passageways for aquatic PETS species.

1.E-Goal 7. Protect the riparian ecosystem while providing for a reasonable amount of compatible recreation.

1.E-Objective 7.A. Inventory dispersed camping sites within 100 feet of perennial streams, in conjunction with annual integrated inventories. Examine 20 percent of known sites annually and designate and rehabilitate or close. Give priority to sites in proximity to aquatic PETS species.

[11] USDA 2001, Walker 2001a

Standards

MINERALS

1.E-MIN-1. All federal mineral activity will be implemented in accordance with the Desired Future Condition and Standards of this Prescription Area; and, depending on site-specific determination, the Forest Service may specify that the surface is not to be disturbed during mineral exploration or development. New federal oil, and gas leases will contain either a No-Surface-Occupancy stipulation or a Controlled-Surface-Use stipulation.

1.E-MIN-2. Do not remove common variety minerals, such as sand and gravel, from stream channels, except as necessary to reduce undesirable buildup at stream crossings.

1.E-MIN-3. Allow non-commercial mineral collection only under terms of a special use authorization where it does not adversely affect stream channel stability, substrate, aquatic species, or their habitat.

ROADS/ENGINEERING

1.E-ENG-1. Construction of any new stream crossings must not adversely affect passage of aquatic organisms or alter stream flow. Exceptions may be allowed to prevent the upstream migration of undesired species.

1.E-ENG-2. Locate fords only where bottom conditions will support the designed use. Maintain stream channel contour and grade when modifying a crossing; armor the bottom with materials that will provide for movement of fish.

1.E-ENG-3. Where risks of resource damage are high, each road segment will be constructed and stabilized prior to starting another segment (stage construction). High-risk areas are those that contain landslide-prone areas, steep slopes, highly erosive soils, or PETS species.

WILDLIFE

1.E-WLF-1. Prohibit in-stream substrate disturbance by mechanical equipment from February 1 through July 31, if aquatic PETS species occur within one-quarter mile upstream and one mile downstream of the project site.

1.E-WLF-2. Where existing grassy openings cause adverse impacts to riparian and aquatic associated species, they will be rehabilitated or no longer maintained as a grassy opening.

1.E-WLF-3. New grassy openings will be established only where needed to provide habitat for aquatic or riparian-associated species.

1.E-WLF-4. Maintain all existing openings in the riparian area corridors of the Red River, the Middle Fork of the Red River, and their larger tributaries. Maintain alternating strips or clumps of grassy/forb, old-field condition, and shrubby condition to provide habitat for the only documented populations of cornsnake on the DBNF.

RECREATION

1.E-REC-1. No new trails for off-highway vehicles, bicycles, horses, and other non-pedestrian modes of transportation are to be constructed within the area, except to approach and cross at designated sites, or where the trail location requires some encroachment (e.g. to accommodate steep slopes).

1.E-REC-2. Do not allow overnight tethering or corralling of horses or other livestock within 100 feet of stream courses or 300 feet of other water bodies. Maintain existing corral sites to limit impacts to water quality and riparian corridors.

1.E-REC-3. Any trail construction must be accomplished in accordance with relevant state Best Management Practices[12] or Forest Service regional/national direction for erosion control (e.g., USFS Region 8 Trails South[13]).

1.E-REC-4. Proposed or new facilities must be developed in accordance with Executive Orders 11988 (for 100-year flood plains) and 11990 (for wetlands). Alternative locations must be considered for all new facilities. Where none exist, potential impacts must be mitigated to moderate the severity of those impacts.

1.E-REC-5. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, semi-primitive motorized, and roaded natural.

1.E-REC-6. New non-motorized trail construction is allowed to improve existing trail configuration and improve access to streams, lakes and the riparian corridor.

1.E-REC-7. Motorized and non-motorized trail reconstruction and relocation within the riparian corridor are allowed to reduce impacts to riparian and aquatic resources.

VEGETATION

1.E-VEG-1. Cable logging corridors, cable sets, and tail trees may be installed in this Prescription Area only at designated locations. Full suspension will be required if logs are yarded across perennial or intermittent streams.

1.E-VEG-2. All motorized equipment must be serviced outside of riparian corridors.

1.E-VEG-3. Cut-and-leave will be the preferred method for control and suppression of insects and disease in the Riparian Corridor. Other control measures may be used when a condition poses a risk to stream stability, degrades water quality, adversely affects habitat for aquatic or riparian-associated species, poses a threat to public safety or facilities, or when the purpose or need for action will not be met.

1.E-VEG-4. Skid roads and skid trails used for management of adjacent Prescription Areas must not encroach upon the riparian corridor.

[12] Stringer and Perkins 1997

[13] USDA Forest Service [undated]

1.E-VEG-5. The removal of coarse woody debris (pieces greater than 3 feet long and 4 inches in diameter on the small end) is allowed only if it poses a risk to public safety or water quality, degrades habitat for aquatic or riparian-associated species, or when it poses a threat to private property or Forest Service infrastructures.

1.E-VEG-6. Collection of non-timber forest products within 50 feet of a perennial or intermittent stream is subject to the following restrictions:

a) Personal use moss collection is prohibited.

b) Collection of other species within this zone is limited to those species that cannot be feasibly collected elsewhere (e.g., no collection of Rhododendron is allowed within riparian areas because it can be collected on upland or midslope sites.)

c) For ground disturbing activities (transplants, root digging, etc.) a maximum of 10 plants will be allowed per permit, with no more than two permits sold to an individual per year.

d) Non-destructive activities (seed collection, cuttings, etc.) are allowed for all species unless otherwise prohibited.

PRESCRIBED FIRE

1.E-FIRE-1. Do not construct prescribed firelines with heavy, mechanized equipment (e.g., trackhoes and bulldozers).

1.G. RARE COMMUNITY

Setting

Rare communities usually occur as small (a few hundred square feet to a few acres) areas of distinguishing vegetation, often with related surface and ground water conditions, and soil and bedrock characteristics. They generally occur as small islands in the context of a larger forest community. They are disturbance sensitive, but often disturbance dependent, communities of plants and animals. Most of these communities provide specific habitat for rare or uncommon plants and animals. Prior to 1700, many of these rare communities were more abundant than they are today (Owen 2002, Trani-Griep 2002). Many are likely to disappear over time without direct manipulation of vegetation.

Management zones have been established around the most sensitive of these communities. In this document, the rare community itself is referred to as the "rare community site," and the surrounding management zone is referred to as the "rare community management zone" (See Figure 3 - 2). Rare community management zones occur only around wetland communities.

Community Descriptions: Rare communities occur throughout the DBNF. Many specific communities have been identified on the Forest. They are described below as they currently exist. Many different systems exist for defining and identifying any community, and there is no exception for rare communities (see Owen 2002). All are influenced by surrounding abiotic and biotic conditions as well as management activities within, and adjacent to, the rare community.

Streamhead Seeps/Bogs: Naturally occurring (rarely induced by human action) wetlands associated with low-order streams. As the name implies, they most often occur in or near streamheads, usually on 2nd and 3rd order streams but rarely on or near 4th order streams. These are areas of boggy soils with vegetation growing in saturated pockets of sand. They are supplied water by both the stream and ground water seeps from geologic contact zones along the stream channel. Water flows perennially in these sites, although at times it is low-rate subsurface flow. Vegetation is dominated by herbaceous species with sphagnum moss species often dominant. Trees and shrubs may be present. These sites harbor many rare or uncommon species such as grass pink, white fringeless orchid, and ginger-leaved grass-of-Parnassis. Numerous, possibly endemic, crayfish species inhabit these sites. They provide habitat for a variety of amphibians, birds, and small mammals (Trani-Griep 2002). These sites are sensitive to changes in water flow, especially changes in surface water flow. Roads and other soil cutting activities can severely alter their hydrology.

Slope Seeps: Naturally occurring wetlands associated with extensive geologic contact zones. Generally located down slope, these low-order streams drain, rather than feed, wetlands. Like streamhead seeps and bogs, these boggy areas are formed of saturated soils. Water flows perennially in these sites, although at times it is low-rate subsurface flow. Vegetation is dominated by herbaceous species with sphagnum moss species often dominant. Trees and shrubs may be present. These sites harbor many rare or uncommon species, such as the caric sedge *Carex seorsa* and the liverwort *Telaranea nematodes*. They provide habitat for a variety of amphibians, birds, and small mammals (Trani-Griep 2002). The sites are sensitive to changes in water flow, especially changes in surface water flow. Roads and other soil cutting activities can severely alter the hydrology of these sites.

Swamps: Naturally occurring wooded wetlands. They are characterized by standing water throughout the year (some drying may occur in drought years) and the presence of trees tolerant of flooding. They form in depression areas where clay layers prevent seepage of water out of the depressions. Water may come from flooding, stream inflow, or ground water sources. Trees dominate the vegetation, but tufts of emergent herbaceous species are common. These harbor many rare or uncommon species, such as the uptight caric sedge. Many swamps have been drained or filled-in over the last 200 years (Owen 2002).

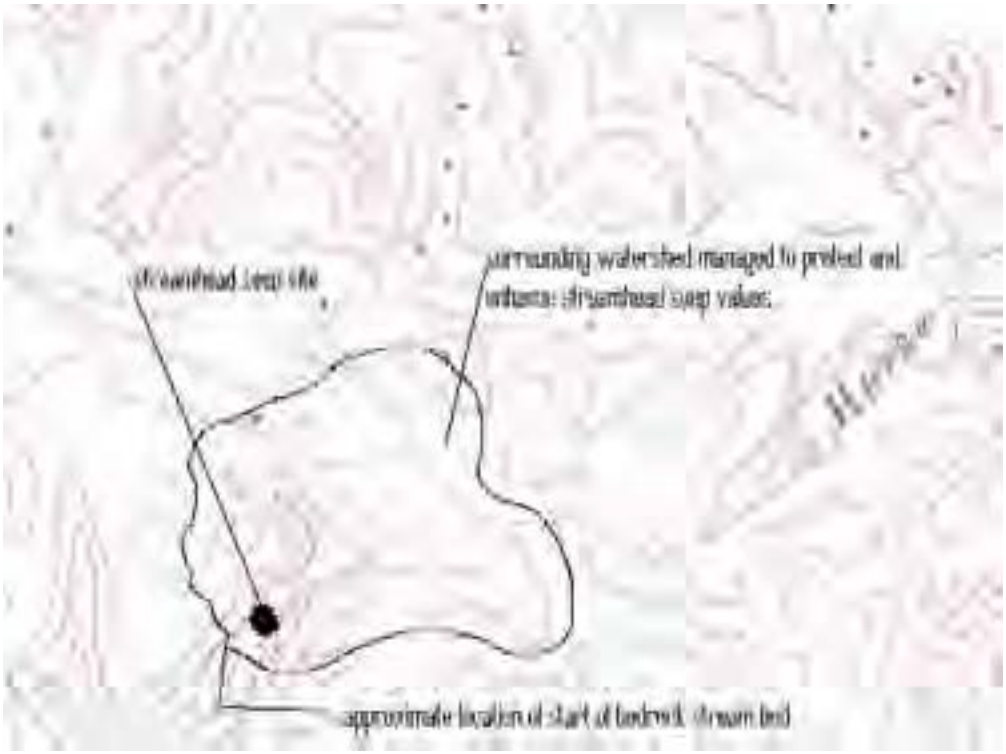


Figure 3 - 2. **This example shows the delineation of a watershed area that forms a rare community management zone around a wetland rare community site. (Not an actual site.)**

Natural Ponds: Naturally occurring water bodies. On the DBNF, they occur along ridgetops, usually on those capped by sandstone. They appear as old farm ponds, but usually have trees growing in or at their edges. Frequently, the buttonbush shrub is found in these ponds. Ponds may harbor rare or uncommon species such as pond caric sedge. Several of these ponds have yielded pollen and charcoal records from bottom sediments. Unfortunately, dredging or fill altered many of these ponds in the last 200 years. Land use change on surrounding lands has also altered many natural ponds. Many of these ponds retain water throughout the year, except in drought years, but some regularly dry out.

Limestone Glades: Naturally occurring areas (rarely induced by human action) of thin soil on limestone cliffs or outcrops. Tree growth is absent or severely stunted, although shrubs may be present. Vegetation dominated by herbs, usually grasses and sedges, is often sparse. Most glades are dry, but they can have associated seeps. They harbor rare or uncommon species such as mountain lover and nettleleaf noseburn. They are threatened by fire exclusion, loss of large-

ungulate herbivory (grazing by large, hoofed mammals), and activities such as quarrying (Trani-Griep 2002).

Sandstone Glades: Naturally occurring areas of thin soil on sandstone cliffs or outcrops. Tree growth is absent or severely stunted, although low shrubs are commonly present. Vegetation is dominated by low shrubs or herbs and may be sparse. Most glades are dry, but they can have associated seeps. They harbor rare or uncommon species such as box huckleberry and occasionally Appalachian spreading pogonia.

Spray Cliffs: Naturally occurring areas (rarely induced by human action) found at and adjacent to waterfalls. They are zones of high humidity, constant moisture, and cool temperatures created by waterfall spray. Portions of the cliff are often shaded, further enhancing moist, cool conditions. Spray cliff-zones harbor many rare or uncommon species such as little mountain meadow rue, sword moss, and cliff caddisfly.

Canebrakes: Naturally occurring grasslands or wooded grasslands dominated by a form of cane, a native bamboo. They are usually dense and once extended for tens of acres. Canebrakes are usually associated with river flood plains (river cane form), but also occur on uplands (hill cane form). Many of the canebrakes on the Forest are in poor condition; all are small. Cane itself is somewhat uncommon on the Forest. Canebrakes may once have been primary habitat (Trani-Griep 2002, Brantley and Platt 2001) for the uncommon Swainson's warbler.

Native Warm-season Grasslands: Naturally occurring grasslands (such areas created by human action also are present on the Forest) that are dominated by warm-season grasses. Many of these areas are edaphically controlled, but most are maintained by fire. Historically, they were associated with burned yellow pine, upland oak and mixed oak-yellow pine woodlands, occurring as open areas between clusters of trees. They were likely more common in the past. In the grassland areas, trees are usually absent, although small shrubs and saplings may occur in sites of poorer condition. These areas are generally small, often less than one-quarter acre, but may occur as areas as large as 20 to 30 acres. Native warm-season grasslands provide habitat for many rare or uncommon species such as royal catchfly and yucca-leaved rattlesnake master. In conjunction with woodland, they provide habitat for uncommon species such as eastern slender glass lizard and Diana fritillary. These communities are threatened by fire exclusion, loss of large ungulate herbivory (grazing by large, hoofed mammals) and land use change (see Owen 2002).

Wet Meadows: Native communities associated with fragipan soils or ground/surface water sources that maintain moist to wet soils through most of the year. Cool-season grasses (some warm-season grasses may be present), sedges and rushes dominate the vegetation. Various forbs are present. Woody plants are generally few, primarily small shrubs. Wet meadows are often associated with river flood plains, but may occur on broad toe slopes and ridges. They provide habitat for rare or uncommon species such as grass-pink, and, if extensive enough, sedge wren. These communities are threatened by draining, loss of large ungulate herbivory (grazing by large, hoofed mammals), possibly fire exclusion, and control of stream flows.

Cedar Glades: Naturally occurring communities associated with usually dry limestone outcrops and cliffs. On the DBNF, most are along ridgetops, but at least one is on a limestone slope. The sites are rocky with thin soil. Eastern redcedar is often the dominant woody species, but past management may have reduced redcedar, allowing oaks and ashes to become dominant. The canopy may be open with either a grass-forb or shrub dominated understory. Closed canopies

often have sparse understories with extensive thickets of catbrier and sawbrier. The open canopy condition provides habitat for many rare or uncommon species such as mountain lover and Harris's goldenrod. Many have been altered through fire exclusion.

Cedar Woodlands/Grasslands: Are defined as a naturally occurring mosaic of eastern redcedar and predominantly native grass-sedge patches. The communities often appear as overgrown abandoned fields, but are dominated by native species. These communities occur on siltstone (rarely other calcareous substrates including mudstone and limestone) slopes. The sites are generally dry, and a combination of infrequent fire and edaphic (soil) conditions maintain the community. Herbivory by large ungulates may have occurred in the past. The loss or reduction of these disturbances threatens the community type. This community type is known in Bath County, but has not yet been documented on the DBNF. This community type is known to provide habitat for the rare juniper sedge. The community is included here as there is some possibility it may occur on the Forest, and there is need to recognize the community. Additionally juniper sedge occurs more frequently in an oak dominated variant of this community type at the southern edge of its range (Naczi and Ford 2001). This community variant is included here if it occurs with juniper sedge.

This Prescription Area, found in all Management Areas, is currently estimated at approximately 1,200 acres across the Forest.

This Prescription Area is classified as Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

Emphasis of Condition: These areas are managed to promote the habitat conditions that support the diverse and locally unique assemblage of plant and animal species occurring within them. While not devoid of human influence, natural conditions are allowed to regulate the communities when possible. Rare communities may continue to be protected as classified, or may be recommended for designation as a botanical or zoological area.

Desired Ecosystem Conditions: These systems are dynamic and subject to a variety of weather and other disturbances. Some, such as streamhead wetlands, appear to be somewhat mobile within a stream channel over time, so they are never truly stable. However, as habitat for numerous rare species, stability of the community within the capability of the system is desired; i.e., the desire is to sustain the communities in a condition to support the species associated with them. These areas are characterized by conditions particular to the community in question.

Streamhead Seeps/Bogs and Slope Seeps: Are stable within their respective watersheds. Natural ground and surface water flows and flow patterns are allowed to control the hydrology of the system with limited influence from surface features such as roads and trails. The vegetation immediately adjacent to the seep/bog provides a mosaic of heavy to light shade and open areas. The vegetation within the seep/bog is dominated by graminoids within a matrix of sphagnum mosses and other mosses and liverworts. Vegetation within the rare community area of the watershed is conducive to providing steady, seasonally variable, water flow to the system and allows lateral light to reach portions of the seep/bog. Vegetation around upland seeps/bogs is maintained in an array of basal areas from 60-100 square feet per acre, and is influenced by regularly prescribed fire, which may at times burn through all or portions of the seep/bog.

Vegetation around more sheltered seeps/bogs may or may not be fire-mediated. Non-native invasive species are not found in this community and aggressive native species are controlled.

Swamps: Are stable within their respective watersheds. Natural ground and surface water flows and flow patterns will be allowed to control the hydrology of the system with limited influence from surface features such as roads and trails. The vegetation immediately adjacent to the swamp provides a mosaic of heavy to light shade and open areas. The vegetation within the swamp is dominated by graminoids underneath a canopy of trees and shrubs tolerant of prolonged flooding and saturated soils. Areas of shaded and open, standing water are likely to occur. Snags likely occur in the swamp. Vegetation immediately surrounding swamps is generally wet-soil tolerant. Vegetation in the rare community area of the watershed is generally of a river flood plain or mixed mesophytic forest type. Non-native invasive species are not found in this community and aggressive native species are controlled.

Natural ponds: Are hydrologically stable. Natural seasonal fluctuations in water levels are expected. In extended drought periods, natural ponds may dry completely. Species such as buttonbush and red maple may grow in ponds, or ponds may have open water. Natural ponds will be in forested settings. Surrounding yellow pine or hardwood forests may have low to high basal (60-100+ square feet per acre), but at the pond margin both open and dense vegetation areas occur. In addition dead falls are found in and at the edge of the pond. Snags may occur in and at the edge of the pond. Vegetation immediately adjacent to the pond consists of species tolerant of saturated soils and seasonal flooding. Prescribed fire may occur adjacent to natural ponds. Non-native invasive species are not found in this community and aggressive native species are controlled. No fish are found in these ponds.

Limestone Glades: Remain largely open, with limited woody vegetation. Pockets of low shrubs may occur. Mosses, graminoids, forbs, and rock dominate the glade. An occasional tree may occur. Most often these glades are dry, but seasonal or perennial seeps are found in many. Surrounding wooded land may have low to high basal area, 40-100+ square feet per acre. Some areas of dense vegetation occur at the transition between glade and wooded area. Low intensity, short duration fire may occur in these glades, but is infrequent, with generally no more than one fire per 10 years. Non-native invasive species are not found in this community and aggressive native species are controlled.

Sandstone Glades: Remain largely open, with limited trees and tall shrubs. Lichens, graminoids, forbs, low shrubs, and rock dominate the glade. An occasional tree may occur. These glades generally are dry, but seasonal or perennial seeps are found in many. Surrounding wooded land may have low to high basal area, 40-100+ square feet per acre. Some areas of dense vegetation occur at the transition between glade and wooded area. In places, adjacent canopy trees shade the glade at least part of the day. Low intensity, short duration fire may occur in these glades, but is infrequent, generally no more than one per 10 years. Non-native invasive species are not found in this community and aggressive native species are controlled.

Spray Cliffs: Are hydrologically stable, responding to the natural seasonal variation in streamflow. Cliff surfaces adjacent to the cliff remain moist and humid. They are situated in forested conditions, with the crest of the waterfall in yellow pine or oak dominated forest in upland areas, and the crest in mixed hardwood or mixed conifer-northern hardwood forest in midslope or lower slope areas. The foot of the waterfall is usually heavily shaded and high humidity and cool temperatures are maintained. The slopes within 200 feet either side of the

waterfall are undisturbed except by natural events. The cliff edge within 200 feet either side of the waterfall is undisturbed except by natural events, occasional prescribed fire, and replacement of pitch pine if it does not naturally regenerate. Non-native invasive species are not found in this community and aggressive native species are controlled.

Canebrakes: While actively growing, are stable or increasing in size. Whether under a canopy or in the open, stems are dense, generally greater than 15 per square foot. Few plant species other than cane and overstory trees are found in these areas. Both upland and river bottom canebrakes are found. Canebrakes burn approximately once every seven years. Other than flood and fire events, and management to maintain wooded sites at between 40-60 square feet of basal area, canebrakes are undisturbed. Roads and trails are not found in canebrakes. Non-native invasive species are not found in this community and aggressive native species are controlled.

Native Warm-season Grasslands: Usually occur as areas of 1 to 15 acres in size, but some areas may exceed 100 acres. Native warm-season grasses and native forbs dominate the community. Few, if any, shrubs or trees occur in the areas, but open forest may occur around the community or as small, isolated pockets in extensive areas of native warm-season grasses. Numerous birds, small mammals and reptiles find habitat in these areas. Regular occurrence of fire reduces accumulated biomass and promotes flowering of grasses and forbs. Non-native invasive species are not found in this community and aggressive native species are controlled.

Wet Meadows: Occur as areas of one-quarter to five or more acres in size. They are hydrologically stable, influenced primarily by seasonal variation in precipitation. The water table remains at or just below the surface. Hydrological influences from trails and roads are minimal. Native graminoid and native forb species dominate the vegetation. Small clusters of shrubs or trees may occur. Non-native invasive species are not found in this community and aggressive native species are controlled.

Cedar Glades: Occur as mosaics of open eastern redcedar (40-60 square feet basal area) and open, generally rocky areas. Other trees such as chinquapin oak and blue ash may be present, but eastern redcedar is dominant. In open areas, low shrubs or grass-sedge-forb species dominate the vegetation. Infrequent, low-intensity fires with short residence-time occur at greater than 10-year intervals. Non-native invasive species are not found in this community and aggressive native species are controlled.

Cedar Woodlands/Grasslands: Remain stable; eastern redcedar is the dominant woody species (with the exception indicated in the Setting). Open grass-sedge areas are herbaceous with little or no woody vegetation; forbs are secondary to grasses and sedges. Fire is expected in these areas, probably on a greater than 10-year return interval. Non-native invasive species are not found in this community and aggressive native species are controlled.

Desired Facilities and Human Activities: Roads, trails, or other facilities may be found within some rare community areas, but these are not encouraged. Dispersed recreational uses occur but are not encouraged. Management activities may occur as needed to restore, maintain, or enhance these communities, including, but not limited to, maintenance and construction of roads, trails, ponds, openings, prescribed burning, and removal of any natural materials, including through salvage cut.

Goals and Objectives

1.G-Goal 1. Maintain rare communities in a condition capable of sustaining the species associated with them.

1.G-Objective 1.A. Bring all National Forest System roads in or within 100 feet of a rare community site or management zone, and which are required for administrative or public access, to a design standard compatible with the associated rare community to prevent diminution of the community's function. Close or obliterate unneeded roads.

1.G-Objective 1.B. Eliminate non-native invasive species from the areas as soon as possible. Prevent the establishment of populations of non-native invasive species. Control invasive native species if they threaten the integrity of the rare community.

1.G-Objective 1.C. Use available tools, such as prescribed fire, to maintain the community in a reasonably stable condition. Apply management as frequently as necessary to prevent major changes in vegetation. Base the timing of management on a rare community's specific characteristics. Take action as soon as sufficient changes in the community are discovered.

1.G-Objective-1.D. Discourage camping in rare community sites.

1.G-Objective-1.E. Maintain and perpetuate all streamhead and slope seeps and swamps that provide habitat for Conservation species.

1.G-Objective-1.F. Restore or re-establish rare communities where impacts have not fully destroyed the character and function of the community.

1.G-Objective-1.G. Where it is has been degraded, rehabilitate canebrake habitat.

1.G-Objective 1.H. Maintain native warm-season grasslands with periodic prescribed burning.

1.G-Objective 1.I. Maintain a high diversity of native graminoids and forbs in native warm-season grasslands.

1.G-Objective 1.J. Maintain a stable hydrologic regime in wet meadows within natural variation.

1.G-Objective 1.K. Maintain a stable hydrologic regime at spray cliffs within natural variation.

1.G-Objective 1.L. Maintain a stable hydrologic regime in natural ponds within natural variation.

1.G-Objective 1.M. Maintain limestone and sandstone glades with sparse tree cover and a mosaic of rock surface and vegetation.

1.G-Objective 1.N. Maintain redcedar as the dominant tree species in cedar glades.

1.G-Objective 1.O. Maintain a mosaic of redcedar and graminoid vegetation in cedar woodlands/grasslands.

1.G-Goal 2. Map and catalog all occurrences of each recognized rare community.

1.G-Objective 2.A. Conduct an inventory of each rare community occurrence as part of an integrated inventory.

Standards for Rare Communities

Unless otherwise indicated by the codes below, Standards apply to all Rare Community Prescription Areas:

Standards for streamhead bogs or seeps, slope seeps, and swamps, if they provide habitat for Conservation species (WET): Many of these areas occur within the Riparian Corridor Prescription Area. Refer to this prescription for direction as well.

Standards for Canebrakes (CANE): These are usually found in riparian areas. Refer to the Riparian Corridor Prescription Area as well.

Standards for Glades (GLADE): These areas are usually associated with cliffs, but are not limited to them. Refer to the Cliffline Community Prescription Area as well.

Standards for native warm season grassland (GRASS): These areas may be associated with glades, bottomlands, forest, and other areas. Direction for other habitat associations' Prescription Areas should be considered.

MINERALS

1.G-MIN-1. Within Rare Community Sites: the surface is not to be disturbed during any federal mineral exploration or development activity; development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

1.G-MIN-2. Within Rare Community Management Zones: development of federally owned oil and gas is subject to the controlled surface use stipulation; all other federal mineral activity will be implemented in accordance with the Desired Future Condition and standards of this prescription area.

ROADS/ENGINEERING

1.G-ENG-WET-1. New roads, trails, and temporary landings are permitted in rare community management zones (Figure 3 - 2) as long as surface water runoff from roads, ruts, trails, and landings is not concentrated into streams within the defined watershed, but rather dispersed across a wide area.

1.G-ENG-WET-2. Do not permit management activities in seep/streamhead/swamp rare communities (Figure 3 - 2) that are likely to decrease, primarily through changes in hydrologic balance, the likelihood of maintaining the viability of species that have uncertain prospects for continued viability. Hydrologic changes include those caused by changes in canopy vegetation.

1.G-ENG-CANE-1. Do not place impoundments where they can flood or alter canebrakes.

RECREATION

1.G-REC-1. Allow no off-highway vehicle use in the Rare Community site.

1.G-REC-2. Build no new trails in Rare Community sites.

1.G-REC-3. Do not concentrate public use in Rare Community sites.

1.G-REC-4. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, semi-primitive motorized, and roaded natural.

VEGETATION

1.G-VEG-1. Collection of non-timber forest products is not allowed, except for scientific purposes.

1.G-VEG-WET-1. Do not manage the overstory canopy basal area (BA) for less than 60 square feet/acre (existing areas of lower BA may be kept at the lower BA; existing road and utility rights-of-way exempted) in the small watershed above and adjacent to and containing seeps, streamhead bogs, and swamps (Figure 3 - 2). The midstory layer BA may be reduced or removed.

1.G-VEG-WET-2. Do not manage the overstory canopy basal area for less than 60 square feet per acre in the small watershed below and containing seeps, streamhead bogs, or swamps before the stream flows on extensive bedrock (Figure 3 - 2). Areas of existing lower basal area may be managed at the lower basal area. Once the streambed is on extensive bedrock, or below an incised bedrock cataract, head cutting and down cutting concerns are minimized and this standard does not apply.

1.G-VEG-CANE-1. Do not alter canebrakes, except to benefit the canebrake, or as needed for management of PETS species or habitat for Conservation species.

PRESCRIBED FIRE

1.G-FIRE-1. Use prescribed fire only when not detrimental to the rare community.

1.G-FIRE-2. Do not use heavy equipment in rare community sites for prescribed burning.

1.G-FIRE-WET-1. Do not build firelines for prescribed burns through streamhead seeps/bogs, swamps, or other natural wetland rare community management zones, if they are likely to change the hydrologic balance.

1-G-FIRE-GLADE-1. Do not directly ignite glades during prescribed burning unless vegetation is primarily graminoid. Allow fire to move into the glade from other ignited areas.

1.I. DESIGNATED OLD-GROWTH

Setting

Designated Old-Growth refers only to this Prescription Area, and encompasses areas that will be managed specifically to promote, enhance, and maintain the old-growth community. Examination of Future Old-Growth on the forest determined that the dry-mesic oak and mixed mesophytic hardwood (including American beech) were under-represented, with less than 8 percent by old-growth type (Forestwide Objective 1.4.B.). Areas (9) identified for designation contain a high representation of these types, oldest in age structure, and that would add to the network distribution across the forest.

Old-growth stands may exist outside this Prescription Area. Old-growth does not imply first-growth forest, nor does it imply wilderness.

Currently, this Prescription Area consists of nine distinct units ranging from 325 acres to 2,552 acres, averaging 1,703 acres. If any units are to be added in the future, they generally should be at least 300 acres in size for distributional purposes, although stands as small as 10 acres could be included to provide representation for uncommon community types, or for social and cultural benefits.

This Prescription Area contains approximately 15,300 acres across all Management Areas, and is classified as Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

Emphasis of Condition: Old-age trees are encouraged to develop; related structural attributes exist. Old-growth stands are those in the later stages of structural development and typically differ from earlier stages in a variety of characteristics which may include tree size, accumulation of large wood material, number of canopy layers, species composition, and ecosystem function. Different forest communities reach old-growth conditions at different ages, under different disturbance regimes and as a result of differing management strategies. These areas contribute to an old-growth network across the Forest. Both natural processes and anthropogenic fire regimes work to maintain the old-growth types.

Desired Ecosystem Conditions: These areas are characterized by mostly old forest. Trees within old-growth communities range from 100-350 years in age[14]. Based in large part on the characteristics of individual trees and site conditions, individual trees may be older. Numerous large, old trees along with mid-size trees, a scattering of snags and senescent trees of all sizes, as well as rotting deadfalls, are present throughout. Conditions in these old-growth areas reflect the combined characteristics of each habitat association and landscape position.

In mixed mesophytic, white pine-hemlock and conifer-northern hardwood habitat associations, older, tall, large-diameter trees may predominate, but old-growth areas remain uneven-aged forest. Tree stem density is generally high, but variation is to be expected. A closed canopy is common, but tree fall or death frequently creates gaps that become patches of dense, shrubby growth. Fires occur infrequently.

[14] Average age of dominant and co-dominant trees. Some species such as hemlock, buckeye, and beech may live longer.

Upland associations such as oak, yellow pine and mixed oak-yellow pine communities may maintain some even-aged characteristics, but with time they can become uneven-aged. These old-growth associations typically include scatterings of large-diameter, tall trees along with more numerous smaller trees. Tree stem density is generally low to moderate. The canopy is open to nearly closed. Tree fall or death may create small to large gaps that become patches of dense, shrubby growth or prairie-like grassland. Fires frequently occur in these areas. Uneven-aged forest canopies typically are irregular, broken by gaps from natural causes.

Desired Facilities and Human Activities: Developed facilities are not common, but existing trails and other developed recreation sites may remain in place. Dispersed recreation occurs, with generally limited evidence of visitor activities. Depending on the community type and landscape position, evidence of human activity may be limited or extensive, providing a variety of habitat conditions (USDA Forest Service 1997, pp. 23 and 25). Prescribed burning and tree cutting and/or removal promote upland old-growth characteristics.

Goals & Objectives

1.I-Goal 1. Move the area toward a diversity of old-growth community types.

1.I-Objective 1.A. Restore yellow pine-oak and oak-yellow pine forest on appropriate sites.

1.I-Objective 1.B. Use prescribed burning to help perpetuate fire-mediated communities.

1.I-Objective 1.C. Reduce the number of trees in stands on xeric to dry sites to achieve a BA of between 60 and 90 square feet per acre.

1.I-Goal 2. The landscape character goal is "natural appearing."

1.I-Objective 2.A. Scenic integrity objectives range from "high" to "medium" with occasional small areas of "low" where vegetation management is necessary.

1.I-Objective 2.B. Existing roads under Forest Service jurisdiction should be closed and obliterated, where feasible, except for reasons of safety and administrative efficiency. When possible, remaining roads in Forest Service jurisdiction should be gated and maintained at minimum design levels.

1.I-Objective 2.C. Close or rehabilitate areas showing high resource damage.

1.I-Objective 2.D. When conducting salvage operations, reserve 300-acre blocks, which can include areas of up to 90 acres of damaged or downed trees.

1.I-Objective 2.E. Use silviculture and/or pest management where needed to meet legal or safety requirements, or maintain or promote old-growth characteristics.

Standards

MINERALS

1.I-MIN-1. Federal minerals are available under the controlled-surface-use stipulation for this Prescription Area (CSU 1.G), but mineral development facilities will be limited to one percent of each individual old-growth area.

WILDLIFE

1.I-WLF-1. Wildlife openings may not be created in this area.

VEGETATION

1.I-VEG-1. Collection of non-timber forest products is not allowed, except for scientific purposes.

1.I-VEG-2. Only native species or annual cereal grains will be used when revegetating disturbed areas.

1.I-VEG-3. Permit salvage or sanitation activities only when damage to a stand within an old-growth unit is greater than 30 percent of the original stand basal area *and* the total extent of damage exceeds 40 percent of the old-growth unit's area. As defined for this Prescription Area, a stand has damage when trees are dead or likely to be dead within 10 years.

1.I-VEG-4. During salvage or sanitation activities, reserve all 300-acre minimum size (the larger, the better) groups of stands using the following criteria:

a) Include as many intact stands as possible

b) May include up to 30 percent damage throughout

c) May include up to 30 percent (90 acres in 300) of the areas with stands over 40 percent damage.

WILDLAND FIRE

1.I-FIRE-1. Stabilize all wildland fire control lines as soon as possible after their use. If the firelines are revegetated, use native species when available.

1.J. SIGNIFICANT BAT CAVES

Setting

The Significant Bat Caves Prescription Area includes significant bat caves and a ¼-mile radius around each opening. A significant bat caves contains a minimum of 50 Indiana bats (hibernacula) or 5 Virginia or Rafinesque's big-eared bats (maternity site or hibernacula). Such sites are found in a naturally occurring cavity or system of interconnected passages, or a tunnel or mine, located beneath the surface or within a cliff, ledge, or rockshelter. These sites occur in both limestone and sandstone.

This Prescription Area, found across all Management Areas, consists of approximately 6,100 acres.

This Prescription Area is classified as Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

Emphasis of Condition: This Prescription Area is managed to restore or maintain the integrity of significant bat caves, cave openings, and associated underground physical, geological, hydrological, and biological features. These areas remain relatively undisturbed by management activities, except for those designed to protect or maintain PETS species or habitat for Conservation species. Microclimate conditions, primarily temperature and humidity associated with these landscape features, persist. In addition, protection is provided for heritage resources, which are often associated with these features.

Desired Ecosystem Conditions: Overstory trees within this Prescription Area are generally old and usually replaced by natural processes. The forest community within the area varies greatly because caves and rockshelters may occur anywhere on the Forest, ranging from low elevation streamside areas and higher elevation ridgetops. Depending on location, trees may be widely scattered to heavily stocked. Prescribed fire is allowed in this area and trees may show occasional scorch marks. Non-native, invasive species do not occur.

Spelothems, speleogens, and other unique cave formations continue to develop or erode under natural conditions. Water flowing into the cave system contains normally fluctuating background levels of sediment, organic matter, and dissolved minerals and is not polluted.

Desired Facilities and Human Activities: This Prescription Area is protected from human activities and surface disturbance that would cause impacts to cave ecosystems or heritage resources. Protection may include signing, gating, or other physical barriers for caves and rockshelters designated as significant bat caves. Dispersed recreation may occur within the ¼-mile zone, however, selected caves are closed to public entry or have seasonal restrictions. Prescribed fire may occur within the area.

Occasionally, management activities include the use of motorized equipment to construct or maintain roads and trails. Vegetation may be occasionally manipulated to maintain the desired ecosystem condition. Trees damaged or knocked down following unforeseen events such as wildland fire, wind, snow, and insect and disease outbreaks might be removed for public safety or to facilitate restoration consistent with the desired ecosystem condition. Tree felling and removal using motorized equipment could occur. Fire suppression activities could include the use of heavy equipment to construct firelines, while aircraft may provide detection and suppression support.

Goals and Objectives

1.J-Goal 1. Protect or enhance caves designated as significant for PETS bat species.

1.J-Objective 1.A. Acquire from willing sellers private lands that contain or are adjacent to caves or significant sites known to be hibernacula or maternity sites for PETS bats species.

1.J-Objective 1.B. Generally avoid prescribed burning within five miles of significant Indiana bat hibernacula from September 1 through December 1.

1.J-Objective 1.C. Manage all fires to minimize smoke impact to cave and karst areas and associated species.

Standards

MINERALS

1.J-MIN-1. The surface is not to be disturbed during any federal mineral exploration or development activity; development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

RECREATION

1.J-REC-1. Restrict entry to significant colony sites for PETS bat species, where needed, with signs or gates.

1.J-REC-2. Prohibit camping and fire building within 200 feet of an opening to posted colony sites for PETS bat species.

VEGETATION

1.J-VEG-1. Leave existing forest cover undisturbed by management activities unless the activity is designed to improve habitat for PETS and Conservation species.

1.J-VEG-2. Do not permit tree-cutting activities from September 1 through December 1 within five miles of known significant Indiana bat hibernacula.

1.J-VEG-3. Currently suitable roost trees that are 6 inches dbh or greater may be removed without checking for bats only from November 16 through March 15.

1.K. HABITAT DIVERSITY EMPHASIS

Setting

This matrix of diverse habitat unites the Forest landscape. Unless allocated to another Prescription Area, National Forest System land is allocated to the Habitat Diversity Emphasis Prescription Area. It may consist of small to large parcels that may be adjacent to, or possibly surrounded by, other Prescription Areas.

This Prescription Area is currently estimated at approximately 375,900 acres across the DBNF.

Most forest and woodland in this Prescription Area is classified as Suitable for Timber Production (Scheduled Harvest) – Non-timber emphasis (approximately 341,900 acres, non-overlapping). All wooded grassland/shrubland and certain steep or inaccessible areas are classified as Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions. (approximately 18,400 acres).

Desired Future Condition

Emphasis of Condition: This area is managed for the purpose of maintaining biodiversity. Various management techniques are utilized to maintain this area in a variety of habitat conditions, not necessarily supported or found in other Prescription Areas. Planned management considers the type and amounts of habitat conditions created by unplanned disturbance regimes such as wildland fire, severe weather events, and insect or disease epidemics.

Desired Ecosystem Conditions: This Prescription Area consists of a mixture of habitat conditions that provide a desired diversity of communities. The desired diversity includes major plant communities such as mixed mesophytic, upland oak and yellow pine forests, which include American chestnut and non-forest areas such as permanent shrub or grass openings. Diversity of habitats also includes variation in the density and kind of trees within a stand, the kinds and amounts of herbaceous and shrubby plants found under the forest overstory, and the vertical structure within a stand.

Temporary forest openings are created by the removal and/or death of single trees, groups of trees (up to ¼ acre), and/or stands of trees (up to 40 acres). Occasional uncontrolled events such as weather, wildland fire, insects, or disease may result in large areas returning to young age forest habitat. Some permanent openings in grassy, forb or brush condition also are maintained in this Prescription Area. Many of these include some type of pond.

Forest conditions may range from open forest with a sparse overstory of large broad-crowned trees, to closed forest, to dense thickets of young regeneration. A large percentage of the area contains forest with well-developed vertical structure. In these areas, midstory and shrub/saplings layers would be well developed. Oak and other hardwood regeneration is present across the Prescription Area. Yellow pine regeneration, primarily shortleaf and pitch pine, emphasized on the southern portions of the Prescription Area, is also present across the forest. Most terrestrial Management Indicator Species (MIS) are well represented in this area. Invasive non-native species are not present.

Habitats in this area are managed to produce a mosaic of habitat associations. Specific habitat conditions within habitat associations are also managed as a mosaic. Areas of specific habitat

conditions may occur as parcels of less than one-quarter acre up to 100 or more acres. In many cases, habitat conditions grade from one to another without clean, sharp edges. In other cases, distinct delineations are likely to occur.

Distinct blocks of this area are managed as fire-adapted communities. Within this category of fire-adapted communities, we recognize those that are fire-influenced and those that are fire-mediated communities. Fire-influenced communities are adapted to limit the frequency and intensity of fires due the nature of vegetation and physical position on the landscape among other factors, but fire still occurs within them. Fire seldom if ever drives compositional and structural change in fire-influenced communities. Fire-mediated communities are adapted to promote fire, but within community specific limits controlled in part by the nature of the vegetation within these communities and the physical position on the landscape they occupy. Fire drives both compositional and structure conditions within the community.

Within these fire-adapted blocks, fire is a dominant tool used to maintain and restore specific structural and compositional habitat conditions. These blocks include both target (i.e., fire-mediated) and non-target (i.e., fire-influenced) habitat associations where fire is desired in the former, and is not necessarily desired but accepted in the latter. It is within these fire emphasis blocks that open, low basal area (BA) oak or southern yellow pine forest with grassy or shrubby ground layers; warm season grasslands; southern yellow pine forests, and many of the moderate basal area oak forests are to be found. These are the target communities. Fire-influenced, high basal area hardwood forests, including mixed mesophytic and northern conifer-hardwood are also found here.

The following is a description of the major communities and desired habitat components that make up the Habitat Diversity Prescription Area. A more detailed breakdown of long-term objectives by Management Area can be found in Appendix C.

Community Descriptions:

Dense Cove Forest[15] - High canopy, moderate to high basal area (70-120 or more square feet/acre) forest, some with and some without, well developed vertical structure (includes grass/forb, shrub/sapling, midstory, sub-canopy, and canopy layers): This habitat condition consists of mid to old age (70-300 years) canopy trees with various components of sub-canopy, midstory and shrub layers. This condition will be found primarily in forest types found on east and north lower and mid slopes, or in heavily shaded hollows on any aspect. Although most of this condition will occur associated with mixed mesophytic forest, some will occur with riparian forest and some will transition into dry-mesic upland hardwoods. Approximately 112,800 acres of this existing forest condition is provided.

Mid-density Upland Forest[16] - High canopy, moderate basal area (60-70 square feet/acre) forest, some with and some without, well developed midstory and shrub layers (layers evident and easy to find): This habitat condition consists of mid to old age (50-160 yrs upland, 70-240 yrs cove, lower slope) canopy trees with a dense layer of 4-15 feet shrubs/saplings. While dominant on upland sites in the oak, yellow pine and mixed forest types, these conditions can occur in most forest types and in most landscape positions. At least 18,800 acres of this forest

[15] This is "forest" as defined in The Nature Conservancy's National Vegetation Classification (Grossman et al. 1998): trees with their crowns overlapping (generally forming 60-100% cover).

[16] As defined in the National Vegetation Classification (Grossman et al. 1998).

condition is provided. Depending on forest health needs, more of this condition may occur (see Forestwide Goal 2.1).

Woodland[17] - High canopy, low-moderate basal area (30-50 square feet/acre) forest with a well developed shrub/grass/forb layer consisting of any or all of the mentioned vegetation forms: This habitat condition consists of mid to old age (50-200 years) canopy trees with thin to dense low shrubs (≤3 ft) and or grasses/forbs which are promoted by a regular cycle of burning. A low density (≤5 BA) of midstory trees may be present. This set of conditions will be found on upland sites, in hardwood (primarily oak), yellow pine and mixed forest types. It may occur in other forest types and on other landscape positions. Approximately 37,800-50,400 acres of oak-dominated woodland is provided within 30 years. Approximately 12,600-16,800 acres of yellow pine-dominated woodland is provided within 100 years.

Wooded Grassland/Shrubland[18] - High canopy, low basal area (10-29 square feet/acre) forest with a well developed shrub/grass/forb layer: This habitat condition consists of mid to old age (50-160 yrs) canopy trees with thin to dense low shrubs (≤3 ft) or grasses/forbs which are promoted by a regular cycle of burning. A low density (5-10 BA) of midstory trees may be present. Approximately 8,700-13,650 acres of oak-dominated wooded grassland/shrubland is developed, within 50 years. Approximately 6,300-8,400 acres of yellow pine-dominated wooded grassland/shrubland is provided within 100 years.

Two-aged or Even-aged Young Forest - Open, low basal area (10-20 square feet/acre) or no canopy, dense seedling/sapling forest: This habitat condition consists of a limited canopy layer of generally mid age trees with dense seedlings and saplings of trees and shrubs. This will primarily occur where forests are regenerated using two-aged or even-aged silviculture. The condition may occur in any forest type on any landscape position but will generally occur in upland oak, yellow pine or mixed oak and yellow pine forest types. Approximately 18,800 acres is available the first decade and provided each following decade in shifting locations.

Non-forest Vegetation - Open, no-canopy, non-forest areas are maintained in warm or cool season grass, old-field or shrubland condition: This habitat condition is non-forest. In most cases, this condition is permanently maintained on specific sites. It may occur associated with any forest type and in any landscape position, but most are expected to be associated with upland positions and forests. Warm season grasslands are primarily found in association with upland oak, yellow pine and mixed forest types. Approximately 1,600 acres of existing openings are maintained.

Ponds - Ponds occur in two primary forms. One is the typical, permanent waterhole, which may range from a few feet to several yards deep and occupy several hundred square feet to a few acres. The other is the ephemeral pond, which is typically shallow (<2 ft. deep), and seldom occupies over a few thousand square feet. Ponds of either type may occur in any or all of the above vegetation types, but are most common on upland sites. The distribution of ponds is based on ecological capability and site-specific habitat needs. Direction for location of ponds is found under Forestwide Goal 1.2.

[17] Interpreted from the National Vegetation Classification (Grossman et al. 1998) definition of 25-60% canopy cover, at higher canopy cover end; the Forest Inventory and Analysis (FIA, see Hansen et al.1992) definition of low productivity site is not being used here.

[18] These areas, which have >25% canopy cover, fall either into grassland or shrubland in the National Vegetation Classification (Grossman et al.). If grasses are dominant, it is grassland; if shrubs are dominant, it is a shrubland. These areas more or less fit FIA's definition of 'natural rangeland.' *This condition has been called 'savanna', but the term is not used here to avoid confusion with the dry savannas of Africa or the coastal pine flats of the Southeastern U.S.*

Habitat Components:

Open Midstory – A portion of all forest communities within this prescription, do not have midstories. Approximately 36,000 acres of this forest condition is provided.

Hemlock-White Pine Forest – A portion of the forest communities within this Prescription Area consist of stands containing at least 70 percent softwood, of which the plurality of stocking is hemlock or eastern white pine. Approximately 2,900-3,100 acres of this forest type in various forest conditions is provided.

Conifer Northern Hardwood Forest – A portion of the forest communities within this Prescription Area consist of stands containing 50-70 percent softwood, of which the plurality of stocking is hemlock or eastern white pine. Approximately 2,600-2,800 acres of this forest type in various forest conditions is provided.

Mixed Mesophytic Forest – A portion of the forest communities within this Prescription Area consist of stands containing at least 70 percent mesic hardwoods, of which the plurality is not oak. Approximately 81,000 – 84,000 acres of this forest type in various forest conditions is provided.

Beech Forest – A portion of the forest communities within this Prescription Area consist of stands containing at least 70 percent hardwood, of which the plurality stocking is American beech. Approximately 2,600-2,800 acres of this forest type in various forest conditions is provided.

Dry-Mesic Oak Forest – A portion of the forest communities within this Prescription Area consist of stands containing at least 70 percent hardwood, of which the plurality stocking is oak on dry to mesic sites. Approximately 120,000-160,000 acres of this forest type in various forest conditions is provided.

Dry-Xeric Oak Forest – A portion of the forest communities within this Prescription Area consist of stands containing at least 70 percent hardwood, of which the plurality stocking is oak on dry to xeric sites. Approximately 18,000-22,000 acres of this forest type in various forest conditions is provided.

Yellow-Pine Dominated Forest – A portion of the forest communities within this Prescription Area consist of stands containing at least 50 percent softwood, of which the plurality stocking is southern yellow pine (predominantly shortleaf and pitch pine). Approximately 17,100-22,800 acres of this forest type in various forest conditions is restored within 80 years.

Woodland – A portion of the community types within this Prescription Area consist of stands dominated by yellow-pine or upland oaks in various combinations and pluralities, but in a woodland condition. Approximately 46,000 – 56,650 acres are provided in these forest types and condition within 120 years.

Wooded grassland/shrubland - A portion of the community types within this Prescription Area consist of stands dominated by yellow-pine or upland oaks in various combinations and pluralities, but in a wooded grassland/shrubland condition. Approximately 16,700 – 20,500 acres are provided in these forest types and condition within 120 years.

Desired Facilities and Human Activities: A well-designed and maintained road system provides access for resource protection and management. Interpretive signs are maintained in a number of areas easily reached by visitors to explain past and current activities and events. Well-maintained trails are present that are compatible with habitat conditions. Hunting occurs seasonally. When

weather and burning conditions are within prescription, crews routinely burn forest, woodland, and grasslands. Other silvicultural and habitat treatments such as cutting of trees and mowing of openings routinely occur. Temporary roads and logging decks are built for the removal of forest products. Site preparation for artificial and natural regeneration often includes the use of chainsaws, herbicide, and/or heavy equipment[19].

Goals and Objectives

1.K-Goal 1. Maintain a variety of habitat conditions in the area based on both composition and structure.

I.K-Objective 1.A. Maintain 5 to 6 percent within each 5th level watershed in the 0-10 age class, including the effects of catastrophic events. Site-specific stand conditions will determine timing of harvest. Rotations are expected to normally range between 140 and 190 years. Stands with a predominance of trees that have a shorter life expectancy or are in poor condition should have shorter rotations. Stands with a predominance of trees that have a longer life expectancy and are in good condition should have longer rotations.

1.K-Objective 1.B. Maintain approximately 0.4 percent of each Management Area (1,600 acres total within this Prescription Area) in grassy or old-field openings, generally greater than one-quarter acre, of which about half are warm-season grass dominated.

1.K-Objective 1.C. Maintain 30 percent within each 5th level watershed in a relatively closed canopy forest at least 70 years old with midstory and shrub/sapling layers. One-fourth of the 30 percent should be maintained in blocks[20] of at least 620 acres for interior habitat. Each block can include up to 200 acres from adjacent cliff and riparian areas; up to one-third of each block may be thinned to no less than 60 basal area.

1.K-Objective 1.D. Maintain five percent within each 5th level watershed in stands thinned to 60-70 basal areas.

1.K-Objective 1.E. Maintain 10 percent within each 5th level watershed in relatively closed-canopy forest at least 60 years old with dense shrub/sapling layer and little to no midstory.

1.K-Objective 1.F. Manage for 2,900-3,100 acres of hemlock-white pine forest within the Prescription Area, primarily in cove and lower slope positions.

1.K-Objective 1.G. Restore upland white pine plantations to hardwood, yellow pine, or mixed forest types where needed to meet other objectives.

1.K-Objective 1.H. Manage for 2,600-2,800 acres of conifer-northern hardwood forest within the Prescription Area.

1.K-Objective 1.I. Manage for 84,000-87,000 acres of mixed mesophytic forest, including beech-dominated forest, within the Prescription Area**.**

[19]A more detailed description of vegetation management methods and techniques is found in Appendix H.

[20]Service level A and B roads and roads having width exceeding 50', will break up a "block". Up to 5% of the block can be in 0-10 age class or other openings.

1.K-Objective 1.J. Manage for 2,600 to 2,800 acres of beech-dominated, mixed-mesophytic variant forest within the Prescription Area.

1.K-Objective 1.K. Manage for 120,000-160,000 acres of dry-mesic oak forest within the Prescription Area. (Goal 2 includes these acres.)

1.K-Objective 1.L. Manage for 18,000-22,000 acres of dry-xeric oak forest within in the Prescription Area. (Goal 2 includes these acres.)

1.K-Objective 1.M. Provide a minimum of two pieces of downed wood per acre, at least 12 inches in diameter and 10 feet long, across the Prescription Area. Diameter is measured at the midpoint of the largest 10-foot section.

1.K.-Objective 1.N. During the creation and maintenance of woodlands in which overstory cutting occurs, create, or retain when available, a minimum of one snag per acre of at least 16 inch dbh (larger where possible).

1.K-Goal 2. Develop and maintain 120,000 to 160,000 acres of yellow pine and oak forest, woodland, and wooded grassland/shrubland in various mixtures of species and habitat within a fire-meditated system.

1.K-Objective 2.A. Manage distinct blocks, ranging from 500-25,000 acres in size as fire-influenced[21] or fire-mediated[22] communities.

1.K-Objective 2.B. Establish and maintain 85 to 115 acres of yellow pine and yellow pine-hardwood wooded grassland/shrubland in the Cumberland River Management Area during the first decade.

Pine/Grassland/Shrubland (acres)

Management Area	Decade 1
Licking River	0
Middle Kentucky River	0
Upper Kentucky River	0
Cumberland River	85-115
Total	85-115

[21] Fire-influenced here means a community in which fire occurs, but at low intensity and or frequency, and when this fire affects vegetation, the effects are generally expected to be small, and not an important contributor to community composition and structure. These are non-target communities.

[22] Fire-mediated here means a community in which fire occurs and in which fire is expected to drive community composition and structure. These are target communities.

1.K-Objective 2.C. Establish and develop 430 to 570 acres of yellow pine and yellow pine-hardwood woodland in the Cumberland River Management Area in the first decade**.**

Pine Woodland (acres)

Management Area	Decade 1
Licking River	0
Middle Kentucky River	0
Upper Kentucky River	0
Cumberland River	90-110
Total	90-110

1.K-Objective 2.D. Establish[23] 7,030 to 9,370 acres of yellow pine and yellow pine-hardwood on sites decimated by the southern pine beetle epidemic of 1999-2000, during the planning period for forest, woodland, and wooded grassland/shrubland within Management Areas based on the following:

Pine Restoration/Maintenance (acres)

Management Area	Decade 1
Licking River	685-915
Middle Kentucky River	1,030-1,370
Upper Kentucky River	345-455
Cumberland River	4,970-6,630
Total	7,030-9,370

1.K-Objective 2.E. Establish and maintain 600 to 730 acres of hardwood and hardwood-yellow pine wooded grassland/shrubland in the 1st decade. This should be developed within management areas on both dry-mesic and dry-xeric sites based on the following:

Hardwood/Grassland/Shrubland (acres)

Management Area	Decade 1
Licking River	90-110
Middle Kentucky River	90-110
Upper Kentucky River	150-180
Cumberland River	270-330
Total	600-730

[23] The objective is to restore areas that were pine and pine-hardwood, prior to the southern pine beetle epidemic. Any remaining pine stands that meet the new desired condition for forest, woodland or wooded grassland will be considered restored when stand inventory indicates adequate stocking for the condition desired.

1.K-Objective 2.F. Establish and maintain 5,320 to 6,970 acres of hardwood and hardwood-yellow pine woodland in the 1st decade. This should be developed within management areas on both dry-mesic and dry-xeric sites based on the following:

Hardwood Woodland (acres)

Management Area	Decade 1
Licking River	800-1045
Middle Kentucky River	800-1045
Upper Kentucky River	1,330-1,745
Cumberland River	2,390-3,135
Total	5,320-6,970

1.K-Objective 2.G. Maintain with fire, 31,500 to 42,000 acres in upland oak and upland oak-yellow pine forest. This should be developed on both dry-mesic and dry-xeric sites.

1.K-Goal 3. For projects that will increase the production, transmission, or conservation of energy, evaluate federal mineral project proposals in a timely manner while addressing safety, public health, and environmental protection considerations.

Standards

RECREATION

1.K-REC-1. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of Semi-primitive Non-motorized, Semi-primitive Motorized, Roaded Natural, and Rural.

VEGETATION

1.K-VEG-1. When 9-inch dbh snags are not available or cannot be created to meet a minimum of 3 snags per acre, snags of at least 6 inches dbh may be retained or created to provide snag habitat.

2.A. CLIFTY WILDERNESS

Setting

This Prescription Area, congressionally designated under the authority of the Kentucky Wilderness Act of 1985, consists of approximately 12,000 acres within the Middle Kentucky River Management Area.

This Prescription Area is Unsuitable for Timber Production – Timber harvest not allowed.

Desired Future Condition

Emphasis of Condition: This is a primitive place where natural ecological succession is allowed to operate freely to the extent feasible. Little evidence of human activity can be detected. Congress has designated this area as a place where humans influence nature as little as possible.

Desired Ecosystem Conditions: Mostly late-successional and old-growth forests characterize the area including many areas of white pine and hemlock. Naturally occurring openings are available as early successional habitat. Natural ecological conditions and processes prevail. The forest conditions meet habitat requirements for species requiring dense forest cover and downed woody debris, as well as for area-sensitive interior species. Fish and aquatic populations remain relatively stable.

Desired Facilities and Human Activities: This area is managed toward a Primitive Recreation Opportunity Spectrum (ROS) experience. Facilities are not desired here. Dispersed recreation occurs, but evidence of other humans is not easily detected. An occasional visitor might be found hiking, hunting, fishing, or camping. There are a few primitive trails, maintained primarily to disperse use and minimize user impacts, not for visitor convenience.

Goals and Objectives

2.A-Goal 1. Allow natural processes to proceed while managing visitor use at a level compatible with the Wilderness resource without loss of solitude or unacceptable depreciation of Wilderness qualities.

- **2.A-Objective 1.A.** Natural processes will be relied upon to recover degraded Wilderness resources unless damage will continue, without intervention.
- **2.A-Objective 1.B.** Develop a fire management plan that would allow fire to play, as nearly as possible, its natural ecological role, under documented, preplanned, specified conditions; while allowing for suppression of any fire that threatens Wilderness resources, threatens life or property, or poses a threat to human health and safety.

2.A-Goal 2. Provide opportunities for primitive, dispersed recreation featuring the "naturalness" of the environment, solitude, physical and mental challenge, and inspiration that is consistent with preservation of the Wilderness resource.

- **2.A-Objective 2.A.** Manage the social and managerial setting for primitive recreation opportunity spectrum experiences that provide a high degree of solitude, self-reliance and challenge.

2.A-Objective 2.B. Manage the area to maintain Scenic Integrity of Very High.

2.A-Objective 2.C. Provide resources and information to visitors entering the Wilderness so they have "wilderness awareness" and practice a "leave no trace" ethic. They should understand that:

a) Wilderness is primitive and rugged
b) Outdoor skills are necessary for using wilderness
c) They have a responsibility for their own safety
d) They will need to leave the wilderness as they found it.

2.A-Objective 2.D. Complete the Limits of Acceptable Change process with public input.

2.A-Objective 2.E. Design and manage the trail system consistent with Wilderness objectives for solitude, physical and mental challenge, spirit of adventure, and self-reliance. Trail design will control the level of public use. Long-distance trails that pass through the Wilderness, such as the Sheltowee Trace National Recreation Trail, will be consistent with Wilderness management trail guidelines.

2.A-Goal 3. Designate camping areas when needed to minimize environmental impacts.

2.A-Goal 4. Maintain a close relationship with all state, county, and local agencies to provide a common understanding of Wilderness purpose and values to the area.

2.A-Objective 4.A. Continue to coordinate law enforcement search and rescue efforts with Kentucky State Police, local sheriffs' departments, Kentucky Department of Fish and Wildlife Resources, other local officials and entities. Strengthen the cooperators' role.

2.A-Objective 4.B. Work with state and federal air regulatory agencies to achieve the protection appropriate for this Class II Wilderness area.

2.A-Goal 5. Facilitate scientific study that is dependent on a natural setting: a) that seeks to explain wilderness phenomena; and b) which is conducted in an unobtrusive manner consistent with the preservation of the Wilderness resource.

2.A-Goal 6. Achieve a consolidated pattern of National Forest System land and/or mineral ownership that facilitates management of the Wilderness area without infringing on the rights of private owners. Acquire private in-holdings or interests as they become available to better manage the area as wilderness.

2.A-Objective 6.A. Subject to valid existing rights, existing access routes to private in-holdings and cemeteries will be brought under the necessary permit and closed to unauthorized use.

2.A-Goal 7. Remove those sites or structures that do not qualify for the National Register of Historic Places or allow them to deteriorate naturally, unless they are deemed necessary to support wilderness or for administrative purposes outlined in Section 4 (c) of the Wilderness Act.

2.A-Goal 8. Provide protection for known PETS species populations and aid recovery of habitat and populations in areas of their previous habitation.

Standards

LANDS

2.A-LAND-1. Allow no special uses that are inappropriate for the wilderness setting.

MINERALS

2.A-MIN-1. Subject to valid rights effective prior to wilderness designation, all federal minerals in wilderness areas are withdrawn from leasing.

2.A-MIN-2. Surface mitigating measures will be implemented in the development of privately owned minerals.

ROAD/ENGINEERING

2.A-ENG-1. Road closures will use permanent closure methods that appear natural, using such methods as boulder placement, slope restoration, etc. Closed roads will be naturally revegetated. If the area is not expected to revegetate naturally in a reasonable time, revegetate area using native species only.

2.A-ENG-2. The use of motorized equipment is not allowed unless approved by the appropriate Forest Service Line Officer within their delegated authority**.**

RECREATION

2.A-REC-1. Allow no horses or other livestock in this area except on trails designated for such use or as specifically permitted.

2.A-REC-2. Regulation, including designating primitive campsites, will be used only to control the adverse physical and social impacts of human use. Utilize a permit system only when Limits of Acceptable Change standards are exceeded and cannot be met through less restrictive techniques.

2.A-REC-3. Camping is not permitted within 100 feet of the base of any cliff or the back of any rockshelter, unless at a designated site.

2.A-REC-4. No campfire or stove fire is permitted within 100 feet of the base of a cliff, or the back of any rockshelter, unless at a designated site.

2.A-REC-5. No new rock climbing routes with fixed anchors are allowed. However, maintenance or replacement of existing approved fixed anchors is allowed by non-mechnized means.

2.A-REC-6. Upon completion of the Limits of Acceptable Change process**,** outfitter/guiding will be permitted based on the LAC analysis.

2.A-REC-7. Forest Supervisor approval is required for all research projects.

2.A-REC-8. Until the Limits of Acceptable Change process is completed, limit the size of groups to no more than 10 people. Groups over 10 may be allowed only under permit on a case-by-case basis when compatible with Wilderness management objectives.

2.A-REC-9. Mark research plots in an inconspicuous manner not visually evident to the average user.

VEGETATION

2.A-VEG-1. Do not control insect or disease outbreaks unless necessary to prevent unacceptable damage to resources on adjacent lands, or to prevent an unacceptable loss to the wilderness resource due to non-native invasive pests.

2.A-VEG-2. Collection of non-timber forest products in the Clifty Wilderness area is allowed only for scientific purposes, with Forest Supervisor approval.

WILDLAND FIRE

2.A-FIRE-1. Allow the use of aircraft for wildland fire detection, but not for suppression unless approved by the Forest Supervisor on a case-by-case basis.

2.A-FIRE-2. Mechanized or motorized equipment will not be used for wildland fire suppression efforts unless approved by the Regional Forester or Forest Supervisor within their delegated authority.

2.A-FIRE-3. Do not permit emergency burned area rehabilitation unless necessary to prevent an unnatural loss of the wilderness resource or to protect life, property, and other resource values outside of the wilderness.

2.A-FIRE-4. Do not use prescribed fire for the primary purpose of benefiting wildlife, maintain vegetative types or enhance other resource values.

2.B. BEAVER CREEK WILDERNESS

Setting

This Prescription Area, which is congressionally designated under the authority of the Eastern Wilderness Act of 1975, consists of approximately 5,000 acres within the Cumberland River Management Area.

This Prescription Area is Unsuitable for Timber Production – Timber harvest not allowed.

Desired Future Condition

Emphasis of Condition: This is a primitive place where natural ecological succession is allowed to operate freely to the extent feasible. Little evidence of human activity can be detected. Congress has designated this area as a place where humans influence nature as little as possible.

Desired Ecosystem Conditions: Mostly late-successional and old-growth forests characterize the area. Naturally occurring openings are available as early successional habitat. Natural ecological conditions and processes prevail. The forest conditions meet habitat requirements for species requiring dense forest cover and downed woody debris, as well as for area-sensitive interior species. Fish and aquatic populations remain relatively stable.

Desired Facilities and Human Activities: This area is managed toward a Primitive Recreation Opportunity Spectrum (ROS) experience. Facilities are not desired here. Dispersed recreation occurs, but evidence of other humans is not easily detected. An occasional visitor might be found hiking, hunting, fishing, or camping. There are a few primitive trails, maintained primarily to disperse use and minimize user impacts, not for visitor convenience.

Goals and Objectives

2.B-Goal 1. Allow natural processes to proceed while managing visitor use at a level compatible with the wilderness resource without loss of solitude or unacceptable depreciation of wilderness qualities.

- **2.B-Objective 1.A.** Natural processes will be relied upon to recover degraded wilderness resources unless damage will continue, without intervention.
- **2.B-Objective 1.B.** Develop a fire management plan that would allow fire to play, as nearly as possible, its natural ecological role, under documented, preplanned, specified conditions; while allowing for suppression of any fire that threatens Wilderness resources, threatens life or property, or poses a threat to human health and safety.

2.B-Goal 2. Provide opportunities for primitive, dispersed recreation featuring the "naturalness" of the environment, solitude, physical and mental challenge, and inspiration that is consistent with preservation of the Wilderness resource.

- **2.B-Objective 2.A.** Manage the social and managerial setting for primitive ROS experiences that provide a high degree of solitude, self-reliance and challenge.
- **2.B-Objective 2.B.** Manage the area to maintain a Scenic Integrity Level of Very High.

2.B-Objective 2.C. Provide resources and information to visitors entering the Wilderness so they have "wilderness awareness" and practice a "leave no trace" ethic. They should understand that:

a) Wilderness is primitive and rugged
b) Outdoor skills are necessary for using wilderness
c) They have a responsibility for their own safety
d) They will need to leave the wilderness as they found it.

2.B-Objective 2.D. Design and manage the trail system consistent with Wilderness objectives for solitude, physical and mental challenge, spirit of adventure, and self-reliance. Trail design will control the level of public use. Long-distance trails that pass through the Wilderness, such as the Sheltowee Trace National Recreation Trail, will be consistent with Wilderness management trail guidelines.

2.B-Goal 3. Designate camping areas when needed to minimize environmental impacts.

2.B-Goal 4. Maintain a close relationship with all state, county, and local agencies to provide a common understanding of Wilderness purpose and values to the area.

2.B-Objective 4.A. Continue to coordinate law enforcement search and rescue efforts with Kentucky State Police, local sheriffs' departments, Kentucky Department of Fish and Wildlife Resources, other local officials and entities. Strengthen the cooperators' role.

2.B-Objective 4.B. Work with state and federal air regulatory agencies to achieve the protection appropriate for this Class II Wilderness area.

2.B-Goal 5. Facilitate scientific study that is dependent on a natural setting: a) that seeks to explain wilderness phenomena; and b) which is conducted in an unobtrusive manner consistent with the preservation of the wilderness resource.

2.B-Goal 6. Achieve a consolidated pattern of National Forest System land and/or mineral ownership that facilitates management of the Wilderness area without infringing on the rights of private owners. Acquire private in-holdings or interests as they become available to better manage the area as wilderness.

2.B-Objective 6.A. Subject to valid existing rights, existing access routes to private in-holdings and cemeteries will be brought under the necessary permit and closed to unauthorized use.

2.B-Goal 7. Remove sites or structures that do not qualify for the National Register of Historic Places or allow them to deteriorate naturally, unless they are deemed necessary to support wilderness or for administrative purposes as outlined in Section 4(c) of the Wilderness Act.

2.B-Goal 8. Provide protection for known PETS species populations and aid recovery of habitat and populations in areas of their previous habitation.

Standards

LANDS

2.B-LAND-1. Allow no special uses that are not in keeping with the wilderness setting.

MINERALS

2.B-MIN-1. Subject to valid rights effective prior to wilderness designation, all federal minerals in wilderness areas are withdrawn from leasing.

2.B-MIN-2. Surface mitigating measures will be implemented in the development of privately owned minerals.

ROADS/ENGINEERING

2.B-ENG-1. Road closures will use permanent closure methods that appear natural, using such methods as boulder placement, slope restoration, etc. Closed roads will be naturally revegetated. If the area is not expected to revegetate naturally in a reasonable time, revegetate area using native species only.

2.B-ENG-2. The use of motorized ground vehicles is not allowed unless approved by the appropriate Forest Service Line Officer within their delegated authority**.**

RECREATION

2.B-REC-1. Allow no horses or other livestock except on trails designated for such use, or as specifically permitted.

2.B-REC-2. Regulation, including designating primitive campsites, will be used only to control the adverse physical and social impacts of human use.

2.B-REC-3. Camping is not permitted within 100 feet of the base of any cliff or the back of any rockshelter, unless at a designated site.

2.B-REC-4. No campfire or stove fire is permitted within 100 feet of the base of a cliff or the back of any rockshelter, unless at a designated site.

2.B-REC-5. No new rock climbing routes with fixed anchors are allowed. However, maintenance or replacement of existing approved fixed anchors is allowed by non-mechnized means.

2.B-REC-6. Forest Supervisor approval is required for all research projects.

2.B-REC-7. Until the Limits of Acceptable Change process is completed, limit the size of groups to no more than 10 people. Groups over 10 may be allowed only under permit on a case-by-case basis when compatible with Wilderness management objectives.

2.B-REC-8. Mark research plots in an inconspicuous manner not visually evident to the average user.

VEGETATION

2.B-VEG-1. Do not control insect or disease outbreaks unless necessary to prevent unacceptable damage to resources on adjacent lands, or to prevent an unnatural loss to the Wilderness resource due to non-native invasive pests.

2.B-VEG-2. Collection of non-timber forest products in the Beaver Creek Wilderness area is allowed only for scientific purposes, with Forest Supervisor approval.

WILDLAND FIRE

2.B-FIRE-1. Allow the use of aircraft for wildland fire detection, but not for suppression unless approved by the Forest Supervisor on a case-by-case basis.

2.B-FIRE-2. Mechanized or motorized equipment will not be used for wildland fire suppression efforts unless approved by the Regional Forester or Forest Supervisor within their delegated authority.

2.B-FIRE-3. Do not permit emergency burned area rehabilitation unless necessary to prevent an unnatural loss of the Wilderness resource or to protect life, property, and other resource values outside of the Wilderness.

2.B-FIRE-4. Do not use prescribed fire for the primary purpose of benefiting wildlife, maintain vegetative types or enhance other resource values.

3.A. DEVELOPED RECREATION AREAS

Setting

This Prescription Area, found in all Management Areas, is estimated at approximately 3,700 acres across the DBNF.

This Prescription Area is Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

Emphasis of Condition: These areas contain facilities, services, and settings designed for human activities that do not exceed site capability but provide at least a minimum level of human needs. These facilities include campgrounds, picnic areas, boat ramps, interpretive sites, overlooks, swimming areas, and trailheads. Management emphasis is placed on services and facilities that fill market niches best provided by the National Forest. Cost-effective operation of facilities is a major, but not the only consideration. Facilities that provide little public service for the operating and maintenance costs involved are considered for closure, change in operations, or redesigned. While some recreation areas may have modifications to handle large numbers of people and provide desired amenities, these areas retain the sense of a natural environment and aesthetically blend with their surroundings. Visitors feel comfortable bringing their entire family to participate in appropriate site activities. These sites serve as "gateways" to the wide diversity of recreational opportunities on the remainder of the Forest.

Desired Ecosystem Conditions: These areas have facilities that are generally shaded and screened by various tree and shrub species. The surrounding forested transition provides for esthetic values. Within these surrounding areas, a variety of wildlife and plants are available for viewing or study. Rare communities of plants and animals are not normally found in these areas, but are protected where they occur.

Desired Facilities and Human Activities: Facilities are designed to fit the landscape based upon site activity type and capacity. They provide for minimal human needs in addition to safety and security. Based upon the characteristics of the land as well as intended uses, sites are available for use by visitors with disabilities.

Each site is designed to support specific activities appropriate to the area. Sites are designed and managed to encourage positive human interaction as well as interaction between humans and the environment. Human activity is concentrated at sites designed to reduce impacts to the environment.

Vegetation management is used primarily to maintain the health of trees and shrubs, to maintain the shade and air circulation necessary to enhance the recreation experience, and to ensure visitor safety.

These facilities are managed for one of the following four[24] development levels of the Recreation Opportunity Spectrum (ROS) experiences:

Development Level 5: Highly developed sites provide experiences expected in a more "urban" forest setting. Numerous facilities of mostly non-native materials and very refined design can be expected. Convenience facilities are prevalent, including showers, flush toilets, paved roads and trails, entrance stations, playgrounds, beaches, and recreation vehicle hookups. Paved, striped roads access facilities. The Experiences best representing this level is Urban.

Development Level 4: Heavily developed sites provide experiences expected in a rural-urban interface area. Access is by double-lane gravel or paved roads. Some complex facilities with some non-native but harmonious materials are present. Many convenience facilities such as flush toilets, lighting, and piped-in water may be available. Moderate to heavy site modification occurs. The Experiences best representing this level are either Urban or Rural.

Development Level 3: Moderately developed recreation areas provide experiences expected in a more rustic setting. Some privacy is expected. Gravel roads capable of accommodating conventional motorized vehicles including sedans with trailers, and smaller motor homes, provide access. Facilities are developed for protection of the site as well as for user convenience. These may include vault or chemical toilets, graveled site pads, picnic tables, and grills or fire rings. The Experiences best representing this level are Roaded Modified or Roaded Natural.

Development Level 2: Minimally developed recreation sites offer an opportunity for solitude, tranquility, and closeness to nature. These sites offer visitors a higher degree of self-reliance, challenge, and risk. There is normally a low concentration of users in this area. Vegetative alterations, very small in size and number, are primarily for public safety. They are widely dispersed and blend with the natural vegetation. Minimal site modification is required for the limited facilities as well as for safety and resource protection. Facilities are normally constructed from native-appearing, rustic materials. The Experiences best representing this level are Roaded Natural or Semi-Primitive Motorized.

Goals and Objectives

3.A-Goal 1. Provide areas that are safe, cost-effective to operate, and meet the target market population's needs that are best served on National Forest System lands.

3.A-Objective 1.A. Through collection and analysis of pertinent data, develop a core mission/niche for the Forest's recreation program to guide planning and development.

3.A-Objective 1.B. Apply business principles to ensure sustainable developed recreation services and facilities with measurable performance standards.

[24] Development Level 1, Dispersed Sites with Minimum Site Modification, are not inventoried as developed recreation sites.

3.A-Goal 2. Assign each facility a development level and associated experiences. Design and operate in compliance with the assigned development level and experiences in a safe, cost-effective manner.

3.A-Objective 2.A. Develop annual district-level operations and maintenance plans for developed recreation facilities. These should include annual monitoring and mitigation of any health or safety problems.

3.A-Goal 3. Use developed recreation areas as an opportunity to provide conservation education and interpretive programs.

Standards

LANDS

3.A-LAND-1. Non-recreation special uses are not to be permitted in these areas unless they are for the purpose of serving the public in ways appropriate for these areas, or to serve some other Forest Service objective.

MINERALS

3.A-MIN-1. The surface is not to be disturbed during any federal mineral exploration or development activity; development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

RECREATION/SCENERY

3.A-REC-1. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiences of semi-primitive non-motorized, semi-primitive motorized, roaded natural and rural.

VEGETATION

3.A-VEG-1. Collection of non-timber forest products is not allowed, except for scientific purposes.

3.B. LARGE RESERVOIRS

Setting

This Prescription Area consists of the water surface at summer pool, and a 300-foot wide zone inland from the water's edge at summer pool, of the entire National Forest shoreline of Cave Run Lake, Laurel River Lake and Lake Cumberland.

This Prescription area consists of 30,600 acres in the Cumberland River and Licking River Management Areas.

This Prescription Area is Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

Emphasis of Condition: These reservoirs provide quality water-based opportunities for recreation in a natural setting. Developed access and recreation sites along trash free shorelines are provided and managed in accordance with Prescription 3.A as long as such management does not conflict with flood control or power generation.

Desired Ecosystem Conditions: Water in these reservoirs meets the state and federal standards. Vegetative diversity exists that provides a variety of plants that support fisheries and wildlife. Submergent and emergent vegetation is present in shallows. Sport fish species are abundant. Where applicable, water quality is suitable for municipal water supplies. Non-native, invasive flora and fauna are not present.

Desired Facilities and Human Activities: The reservoirs provide for family oriented activities, including permitted recreation events and outfitting-guiding that promote positive, sustainable tourism for the locale and region. A variety of boats are seen on the lake surface. Recreation use is concentrated at permitted, privately owned marinas, as well as developed Forest Service recreation sites and boat ramps. Direct contact with other users at these locations is highly probable. Use decreases as one moves away from these sites to the point that a feeling of solitude may occur at times in some areas of these reservoirs. Contact with other users is sporadic and is controllable by the user, by choosing the area and the time of visit. The reservoirs range from very busy, active, and crowded, to solitary or deserted. The reservoirs are managed to provide differing levels of development and human activities in various areas of the reservoir and along the shoreline. Water-based activities, particularly boating, are managed to ensure safety. Management activities and shoreline developments make few dominating visual impacts when viewed from the reservoirs.

Occasionally, management activities include the use of motorized equipment to maintain existing roads and trails. Vegetation may be occasionally manipulated to maintain the conditions that are consistent with the area's designation. Trees damaged or knocked down following unforeseen events such as wildland fire, wind, snow, and insect and disease outbreaks might be removed for public safety or to facilitate restoration toward the conditions that are consistent with the area's designation. Tree felling and removal using motorized equipment could occur. Fire suppression activities could include the use of heavy equipment to construct firelines, while aircraft may provide detection and suppression support. Evidence of prescribed burning may be found.

Goals and Objectives

3.B-Goal 1. Manage reservoirs to maintain water quality that meets state and federal standards.

3.B-Objective 1.A. Promote water quality improvement through environmental education, law enforcement, and special events.

3.B-Objective 1.B. As soon as possible after their discovery in a reservoir, take actions to eradicate non-native, invasive flora and fauna.

3.B-Goal 2. Manage lake shorelines to maintain natural appearance when viewed from the water despite scattered areas of development.

3.B-Objective 2.A. Acquire private lands and mineral rights in reservoir viewsheds when possible.

3.B-Goal 3. Where not in conflict with flood control or power generation objectives, manage reservoirs to provide safe, family oriented, water-based recreation experiences.

3.B-Goal 4. Improve wildlife and fisheries habitat to enhance wildlife viewing and fishing opportunities.

3.B-Goal 5. Provide cost-effective recreational access to reservoirs that complements existing recreational facilities.

3.B-Goal 6. Manage reservoirs so users can enjoy various recreation experiences, from solitude in natural environments to high levels of human interaction near developed areas.

3.B-Goal 7. Provide for quality lake recreation and lakeshore fish and wildlife habitat.

3.B-Goal 8. Provide non-recreation special use authorizations when necessary for basic public service and to meet other Forest Service objectives, where no reasonable options are available.

3.B-Goal 9. Provide recreation-related events under special use authorization such as fishing tournaments, and outfitter-guide services.

Standards

MINERALS

3.B-MIN-1. The surface is not to be disturbed during any federal mineral exploration or development activity; development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

RECREATION/SCENERY

3.B-REC-1. Camping is not allowed within 300 feet of the shoreline of Cave Run Lake or Laurel River Lake, except where designated by the Forest Service.

3.B-REC-2. Prohibit the landing of seaplanes on Cave Run and Laurel River Lakes.

3.B-REC-3. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, semi-primitive motorized, roaded natural.and rural.

3.B-REC-4. Marina concessionaires for boats on Cave Run Lake and Laurel River Lake will provide sewage disposal facilities.

VEGETATION

3.B-VEG-1. Vegetation management will only occur:

a) To maintain or protect existing facilities or for the construction of new facilities
b) To improve forest health conditions
c) When needed to protect or restore the natural ecosystem of the area
d) To allow a point of interest to be viewed
e) To provide for fish and wildlife habitat
f) To protect the public.

3.C.1. RED RIVER NATIONAL WILD AND SCENIC RIVER: WILD RIVER SEGMENT

Setting

This 9.1-mile segment of the Red River, located mainly within the Clifty Wilderness Prescription Area, is managed as an integral part of this wilderness to maintain the primitive, wild condition where natural ecological conditions and processes prevail. This area is classified as a Wild and Scenic River under P.L. 95-625. It is also designated a Kentucky Wild River by the Commonwealth of Kentucky. This Prescription Area contains 683 acres in the Middle Kentucky River Management Area.

This Prescription Area is Unsuitable for Timber Production – Timber harvest not allowed.

Desired Future Condition

Emphasis of Condition: This area is part of the Clifty Wilderness. Little evidence of human activity can be detected here. The free-flowing condition, water quality, and Outstandingly Remarkable Values that qualified this stream segment as a National Wild and Scenic River are protected and enhanced.

Desired Ecosystem Condition: The river corridor provides for natural succession and maturing of forest stands into an old-growth, late-successional condition. On flood plains, forests are dominated by species such as sycamore, river birch, green ash, boxelder, and occasionally American beech, yellow-poplar, eastern hemlock, and white oak. Lower slopes, and mid to upper slopes with north or east aspect, are dominated by mixed mesophytic forest composed of yellow-poplar, American beech, yellow buckeye, white ash, eastern hemlock, sugar maple, with various oaks, hickories and occasional species such as butternut, black walnut, black birch, American basswood, and white pine. Mid to upper slopes with south or west aspect are dominated by oaks with numerous occurrences of species associated with mixed mesophytic forests. Yellow pines may occur on the most exposed sites. Forest openings occur naturally.

The river is free flowing and relatively free of human-caused pollutants. Water quality meets federal and state standards.

Desired Facility and Human Activities: This area is managed as Wilderness to provide a Semi-primitive Non-motorized Recreation Opportunity Spectrum (ROS) experience near trails, access points, and other areas of concentrated use. In other more remote areas, Primitive recreation experiences are available. Access to the river corridor is limited to a few primitive hiking trails provided to protect natural resources rather than for human comfort or convenience. People are challenged to rely on their own physical abilities and follow primitive “leave no trace” recreational pursuits. Facilities, such as trailheads and bulletin boards, are usually located outside the Wilderness. Hiking, primitive camping, rock climbing, fishing, hunting, canoeing, kayaking, and rafting are allowed where they do not adversely impact the wilderness resource.

Goals and Objectives

3.C.1-Goal 1. Maintain and enhance the natural character of the river and its corridor by reducing adverse impacts from private development and use.

3.C.1-Objective 1.A. Acquire private lands and mineral rights from willing sellers within the river corridor.

3.C.1-Objective 1.B. Make trash clean up a priority using public information and interpretive programs.

3.C.1-Goal 2. Protect and enhance the Outstandingly Remarkable Values that qualified this area as a Wild and Scenic River. These are: scenic, recreational, geological, heritage, aquatic, and botanical values.

3.C.1-Objective 2.A. Protect and maintain significant heritage resources in consultation with the State Historic Preservation Officer and interested federally recognized tribes.

3.C.1-Objective 2.B. Maintain the river's free-flowing condition. Ensure that it meets federal and state water quality standards.

3.C.1-Objective 2.C. Maintain and enhance the recreational opportunities associated with the river and its corridor.

3.C.1-Objective 2.D. Coordinate with the Kentucky Natural Resources and Environmental Protection Cabinet on management of this Kentucky Wild River in accordance with current or future agreements.

3.C.1-Objective 2.E. Protect the aquatic and riparian habitats that support native species.

3.C.1-Objective 2.F. Complete limits of acceptable change process with public input.

Standards

MINERALS

3.C.1-MIN-1. The lands within ¼ mile of the Wild River bank are statutorily withdrawn from operation of the mineral leasing laws.

ENGINEERING

3.C.1-ENG-1. Any water resources project will be evaluated under the appropriate standard of Section 7 of the Wild and Scenic Rivers Act.

RECREATION

3.C.1-REC-1. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, and semi-primitive motorized.

3.C.2. PROPOSED WILD AND SCENIC RIVER: MARSH CREEK WILD RIVER SEGMENT

Setting

This Prescription Area consists of seven miles of river and 1,240 acres in the Cumberland River Management Area. This river segment has been proposed by the Forest as suitable for federal designation as a Wild and Scenic River. Final action on this designation is pending.

This Prescription Area is Unsuitable for Timber Production – Timber harvest not allowed.

Desired Future Condition

Emphasis of Condition: The northern seven miles of Marsh Creek will be managed as a primitive, wild area where natural ecological conditions and processes prevail with little evidence of human influence. The Outstandingly Remarkable Values that qualified this stream as a proposed National Wild River segment will be protected and enhanced.

Desired Ecosystem Condition: This stream is an area exhibiting natural succession and maturing of forest stands into an old-growth, late-successional condition. On flood plains, forests are dominated by species such as sycamore, river birch, green ash, boxelder, and occasionally American beech, yellow-poplar, eastern hemlock, and white oak. Lower slopes, and mid to upper slopes with north or east aspect, are dominated by mixed mesophytic forest composed of yellow-poplar, American beech, yellow buckeye, white ash, eastern hemlock, sugar maple, with various oaks, hickories and occasional species such as butternut, black walnut, black birch, American basswood, and white pine. Mid to upper slopes with south or west aspect are dominated by oaks with numerous occurrences of species associated with mixed mesophytic forests. Yellow pines may occur on the most exposed sites. Forest openings occur naturally. The river is free flowing with water quality that meets federal and state standards.

Desired Facility and Human Activities: This area is managed to provide a Semi-primitive Non-motorized Recreation Opportunity Spectrum (ROS) experience near trails, access points, and other areas of concentrated use. ROS Primitive recreation experiences occur in the more remote areas. Access to the river corridor is limited to a few hiking trails provided primarily to protect natural resources rather than for human comfort or convenience. Visitors are challenged to rely on their physical abilities and encouraged to follow primitive “leave no trace” recreational pursuits. Minimal facilities are provided, primarily to protect natural resources rather than for the comfort or convenience of visitors. As much as possible, facilities such as trailheads and bulletin boards are located outside the river corridor. Hiking, primitive camping, mountain biking, rock climbing, fishing, hunting, canoeing, kayaking, and rafting occur where they do not diminish the area’s Outstandingly Remarkable Values. The Forest Service, on a case-by-case basis, allows temporary use of motorized vehicles and equipment. Recreational off-highway vehicle use off roads is not found in this area. Rarely will evidence of prescribed burning be found.

Goals and Objectives

3.C.2-Goal 1. Maintain and enhance the natural character of the river and its corridor by reducing adverse impacts from private development and use.

3.C.2-Objective 1.A. Acquire private lands and mineral rights from willing sellers within the river corridor.

3.C.2-Objective 1.B. Make trash clean up a priority using public information and interpretive programs.

3.C.2-Objective 1.C. Limit non-recreational special use authorizations to only those necessary for basic public service and Forest Service objectives, where no other reasonable options are available.

3.C.2-Goal 2. Protect and enhance the Outstandingly Remarkable Values that qualified this area as a proposed Wild and Scenic River. These are: recreational and aquatic fauna values.

3.C.2-Objective 2.A. Protect and maintain significant heritage resources in consultation with the State Historic Preservation Officer and interested federally recognized tribes.

3.C.2-Objective 2.B. Maintain the river's free-flowing condition. Ensure that it meets federal and state water quality standards.

3.C.2-Objective 2.C. Maintain and enhance the recreational opportunities associated with the river and its corridor.

3.C.2-Objective 2.D. Protect the aquatic and riparian habitats that support native species.

3.C.2-Goal 3. Manage the river as a primitive, wild area where natural ecological conditions and processes prevail.

3.C.2-Goal 4. Provide ROS Semi-primitive Non-motorized recreation experiences near trails, access points, and other areas of concentrated use. ROS Primitive recreation experiences will be the goal in the more remote areas. Minimal facilities, such as trails, are provided primarily to protect natural resources, not for the comfort or convenience of visitors.

Standards

MINERALS

3.C.2-MIN-1. The surface is not to be disturbed during any federal mineral exploration or development activity. Development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

ROADS/ENGINEERING

3.C.2-ENG-1. Allow no dams or water diversions to be constructed within the river corridor that would substantially alter the river ecosystem or adversely affect aquatic habitat.

RECREATION

3.C.2-REC-1. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, and semi-primitive motorized.

VEGETATION

3.C.2-VEG-1. Vegetation management will only occur:

a) To maintain or protect existing facilities.

b) To protect against fire, insect, disease, non-native species that threaten to negatively impact the area's Outstandingly Remarkable Values.

c) To protect the public.

3.C.2-VEG-2. Collection of non-timber forest products is not allowed, except for scientific purposes.

3.C.3. RED RIVER NATIONAL WILD AND SCENIC RIVER: RECREATIONAL RIVER SEGMENT

Setting

This Prescription Area consists of 1,440 acres along 10.3 miles of the Red River in the Middle Kentucky River Management Area. This river segment is located within the non-wilderness portion of the Red River Gorge Geological Area. This area is classified as a Wild and Scenic River under P.L. 95-625.

This Prescription Area is Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

Emphasis of Condition: Natural ecological processes and conditions to dominate, but some human influence exists. The Outstandingly Remarkable Values that allowed this to be designated as a National Wild and Scenic River segment are protected and enhanced.

Desired Ecosystem Condition: This segment of the river and its corridor provide for a natural appearing forest interspersed with clifflines. On flood plains, forests are dominated by species such as sycamore, river birch, green ash, boxelder, and occasionally American beech, yellow-poplar, eastern hemlock, and white oak. Lower slopes, and mid to upper slopes with north or east aspect, are dominated by mixed mesophytic forest composed of yellow-poplar, American beech, yellow buckeye, white ash, eastern hemlock, sugar maple, with various oaks, hickories and occasional species such as butternut, black walnut, black birch, American basswood, and white pine. Mid to upper slopes with south or west aspect are dominated by oaks with scattered occurrences of species associated with mixed mesophytic forests. Oaks, and sometimes yellow pines and American chestnut, occur on ridges and the most exposed sites. Openings in the forest canopy occur as the result of natural processes as well as management activities.

The river is free flowing with water quality that meets federal and state standards.

Desired Facility and Human Activities: The area is managed primarily to provide Semi-primitive Motorized and Roaded Natural Recreation Opportunity Spectrum (ROS) experiences while protecting the area's unique heritage resources and biological species. However, at the Gladie Cultural-Environmental Learning Center site a more Rural ROS is maintained. Dispersed recreation in addition to environmental and heritage education are major emphases for this area. Several trails, trailheads, and a few roads are managed to provide access. Among large expanses of forested area, some facilities, such as picnic areas, vistas, and primitive campsites, are provided for the comfort and convenience of visitors. Some developments, such as small ponds and openings, enhance wildlife habitat. In places, ample opportunities to interact with others exist. For most of the area, however, there are opportunities for solitude. Limited reliance on personal physical abilities and primitive skills are required except for activities such as rock climbing, rappelling, and backpacking. Most types of outdoor recreation activities and wildlife enhancements occur where negative impacts to natural resources and forest visitors can be mitigated or controlled through regulation, facility design and operation, or other management. Recreational off-highway vehicle use and special uses not in keeping with the Desired Future Condition do not occur in this area.

Occasionally, management activities include the use of motorized equipment to construct or maintain roads and trails. Vegetation may be occasionally manipulated to maintain the conditions that are consistent with the designation. Trees damaged or knocked down following unforeseen events such as wildland fire, wind, snow, and insect and disease outbreaks might be removed for public safety or to facilitate restoration toward the conditions that are consistent with the designation. Tree felling and removal using motorized equipment could occur. Fire suppression activities could include the use of heavy equipment to construct firelines, while aircraft may provide detection and suppression support.

Goals and Objectives

3.C.3-Goal 1. Maintain and enhance the natural character of the river and its corridor by reducing adverse impacts from private development and use.

- **3.C.3-Objective 1.A.** Acquire private lands and mineral rights from willing sellers within the river corridor.
- **3.C.3-Objective 1.B.** Make trash clean up a priority using public information and interpretive programs.
- **3.C.3-Objective 1.C.** Limit non-recreational special use authorizations to only those necessary for basic public service and Forest Service objectives, where no other reasonable options are available.

3.C.3-Goal 2. Protect and enhance the Outstandingly Remarkable Values that qualified this stream as a Wild and Scenic River. These are: scenic, recreational, geological, heritage, aquatic and botanical values.

- **3.C.3-Objective 2.A.** Protect and maintain significant heritage resources in consultation with the State Historic Preservation Officer and interested federally recognized tribes.
- **3.C.3-Objective 2.B.** Maintain the river's free-flowing condition. Ensure that it meets federal and state water quality standards.
- **3.C.3-Objective 2.C.** Maintain and enhance the recreational opportunities associated with the river and its corridor.
- **3.C.3-Objective 2.D.** Coordinate with the Kentucky Natural Resources and Environmental Protection Cabinet on management of this Kentucky Wild River in accordance with current or future agreements.
- **3.C.3-Objective 2.E.** Protect the aquatic and riparian habitats that support native species.
- **3.C.3-Objective 2.F.** Complete the Limits of Acceptable Change process with public input**.**

3.C.3-Goal 3. Provide for ROS Semi-primitive Motorized or Roaded natural recreational experiences. Maintain a more Rural ROS experience at the Gladie Cultural-Environmental Learning Center site.

- **3.C.3-Objective 3.A.** Provide and maintain access to the river and its corridor.

3.C.3-Goal 4. Maintain and enhance the recreational opportunities associated with the area, particularly dispersed recreational activities such as fishing, canoeing, kayaking, scenic viewing, hiking, camping, backpacking, and rock climbing.

Standards

MINERALS

3.C.3-MIN-1. The surface is not to be disturbed during any federal mineral exploration or development activity. Development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

ROADS/ENGINEERING

3.C.3-ENG-1. Any water resources project will be evaluated under the appropriate standard of Section 7 of the Wild and Scenic Rivers Act.

RECREATION

3.C.3-REC-1. Take action to protect qualifying heritage sites if they are adversely impacted, or will probably be adversely impacted, by human use.

3.C.3-REC-2. Prohibit campfires and camping within 100 feet of the base of clifflines or the back of rockshelters unless at a designated site.

3.C.3-REC-3. Allow no horses or other livestock within this area except on trails designated for such use or as specifically authorized.

3.C.3-REC-4. No trails will be designated for off-highway vehicle use.

3.C.3-REC-5. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, semi-primitive motorized, roaded natural and rural.

VEGETATION

3.C.3-VEG-1. Vegetation management will only occur:

a) To maintain or protect existing facilities or for the construction of new facilities
b) To protect against fire, insect, disease, non-native species that threaten to negatively impact the area's Outstandingly Remarkable Values
c) When needed to protect or restore the natural ecosystem of the area
d) To protect the public
e) To provide for fish and wildlife habitat
f) To provide for viewing of a point of interest
g) For interpretation of heritage and natural resources.

3.C.4. PROPOSED WILD AND SCENIC RIVERS: CUMBERLAND RIVER SEGMENT, WAR FORK CREEK SEGMENT, ROCKCASTLE RIVER SEGMENT - SCENIC RIVERS

Setting

This Prescription Area contains 35.3 miles of river and approximately 5,600 acres of corridors. It is located in the Cumberland River Management Area, except for War Fork Creek, which is in the Middle Kentucky River Management Area. These river segments have been proposed by the Forest as suitable for Federal designation as Wild and Scenic Rivers. Final action on this designation is pending. The Cumberland and Rockcastle River segments are designated as Kentucky Wild Rivers by the state.

This Prescription Area is Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

Emphasis of Condition: Natural ecological processes and conditions dominate, but some human influence exists. The free flowing condition, water quality, and Outstandingly Remarkable Values that qualified these stream segments as a National Wild and Scenic River are protected and enhanced.

Desired Ecosystem Condition: These river segments and their corridors provide for a natural appearing forest. On flood plains, forests are dominated by species such as sycamore, river birch, green ash, boxelder, and occasionally American beech, yellow-poplar, eastern hemlock, and white oak. Lower slopes, and mid to upper slopes with north or east aspect, are dominated by mixed mesophytic forest composed of yellow-poplar, American beech, yellow buckeye, white ash, eastern hemlock, sugar maple, with various oaks, hickories and occasional species such as butternut, black walnut, black birch, American basswood, and white pine. Mid to upper slopes with south or west aspect are dominated by oaks with scattered occurrences of species associated with mixed mesophytic forests. Oaks, and sometimes yellow pines and American chestnut, occur on ridges and the most exposed sites. Openings in the forest canopy occur as the result of natural processes as well as management activities.

Desired Facility and Human Activities: These areas are primarily managed to provide for Semi-primitive Motorized or Roaded Natural Recreation Opportunity Spectrum (ROS) experiences. However, some private lands may have a more Rural Experiences. A few trail and road segments are managed to provide access to the river and its corridor. Between long stretches of undeveloped forest areas there are a few facilities provided for the comfort and convenience of visitors in addition to developments that enhance wildlife and fisheries habitat. Occasional opportunities to interact with others exist. Limited reliance on personal physical abilities and primitive skills may be required except for activities such as boating during high water flows. Recreational off-highway vehicle use and special uses not in keeping with the Desired Future Condition do not occur in these areas. Most types of outdoor recreation activities and wildlife enhancements are appropriate if negative impacts to scenic values, natural resources or forest visitors can be mitigated or controlled through regulation or facility design and operation.

Occasionally, management activities include the use of motorized equipment to construct or maintain roads and trails. Vegetation may be occasionally manipulated to maintain the conditions that are consistent with the proposed designation. Trees damaged or knocked down following unforeseen events such as wildland fire, wind, snow, and insect and disease outbreaks might be removed for public safety or to facilitate restoration toward the conditions that are consistent with the proposed designation. Tree felling and removal using motorized equipment could occur. Fire suppression activities could include the use of heavy equipment to construct firelines, while aircraft may provide detection and suppression support.

Goals and Objectives

3.C.4-Goal 1. Maintain and enhance the natural character of these rivers and their corridors by reducing adverse impacts from private development and use.

3.C.4-Objective 1.A. Acquire private lands and mineral rights from willing sellers within these river corridors.

3.C.4-Objective 1.B. Make trash clean up a priority using public information and interpretive programs.

3.C.4-Objective 1.C. Limit non-recreational special use authorizations to only those necessary for basic public service and Forest Service objectives, where no other reasonable options are available.

3.C.4-Goal 2. Protect and enhance the Outstandingly Remarkable Values that qualified these as Wild and Scenic Rivers. These are: scenic, recreational, geological, and heritage values.

3.C.4-Objective 2.A. Protect and maintain significant heritage resources, in consultation with the State Historic Preservation Officer and interested federally recognized tribes.

3.C.4-Objective 2.B. Maintain and enhance the recreational opportunities associated with these rivers and their corridors.

3.C.4-Objective 2.C. Maintain the free-flowing condition of these study-river segments. Ensure they meet state and federal water quality standards.

3.C.4-Objective 2.D. Coordinate with the Kentucky Natural Resources and Environmental Protection Cabinet on management of these Kentucky Wild Rivers in accordance with current or future agreements.

3.C.4-Objective 2.E. Protect the aquatic and riparian habitats that support native species.

3.C.4-Objective 2.F. Maintain a diversity of forest types in the corridor.

3.C.4-Goal 3. Provide for semi-primitive motorized or roaded natural ROS.

3.C.4-Objective 3.A. Provide access to these rivers.

3.C.4-Goal 4. Maintain and enhance the recreational opportunities associated with the area, particularly dispersed recreational activities such as fishing, canoeing, kayaking, scenic viewing, hiking, camping and backpacking.

Standards

MINERALS

3.C.4-MIN-1. Development of federally owned oil and gas is subject to the controlled surface use stipulation. All other federal mineral activity will be implemented in accordance with the Desired Future Condition and standards of this prescription area.

ROADS/ENGINEERING

3.C.4-ENG-1. Allow no dams or water diversions to be constructed on these river segments that would substantially alter the river ecosystem or adversely affect aquatic habitat.

3.C.4-ENG-2. Evaluations of projects on, directly affecting, or invading the corridors or diminishing the Outstandingly Remarkable Values of these river segments should adhere to the guidance of the Interagency Wild and Scenic Rivers Coordinating Council.

RECREATION

3.C.4-REC-1. Conduct archeological surveys of areas adversely impacted by human use. Take action to protect qualifying heritage sites if they are impacted, or will probably be impacted, by such use.

3.C.4-REC-2. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, semi-primitive motorized, and roaded natural.

VEGETATION

3.C.4-VEG-1. Vegetation management will only occur:

a) To maintain or protect existing facilities or for the construction of new facilities

b) To protect against wildland fire, insect and disease outbreaks, or invasive species and disturbance events that threaten to negatively impact the area's Outstandingly Remarkable Values

c) When needed to protect or restore the natural ecosystem of the area

d) To protect the public

e) To provide for fish and wildlife habitat

f) To provide for viewing of a point of interest

g) For interpretation of heritage and natural resources.

3.C.5. PROPOSED WILD AND SCENIC RIVERS: ROCK CREEK SEGMENT AND MARSH CREEK SEGMENT - RECREATIONAL RIVERS

Setting

This Prescription Area contains 25.5 miles of river and approximately 6,180 acres of corridors. It is located in the Cumberland River Management Area. These river segments have been proposed by the Forest as suitable for Federal designation as Wild and Scenic Rivers. Final action on this designation is pending. The Commonwealth of Kentucky also designates Rock Creek as a Kentucky Wild River.

This Prescription Area is Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

Emphasis of Condition: Natural ecological processes and conditions dominate. However, some human influence may be evident. The free flowing condition, water quality, and Outstandingly Remarkable Values that qualified these stream segments as a National Wild and Scenic River are protected and enhanced.

Desired Ecosystem Condition: These river segments and their corridors provide for a natural appearing forest. On flood plains, forests are dominated by species such as sycamore, river birch, green ash, boxelder, and occasionally American beech, yellow-poplar, eastern hemlock, and white oak. Lower slopes, and mid to upper slopes with north or east aspect, are dominated by mixed mesophytic forest composed of yellow-poplar, American beech, yellow buckeye, white ash, eastern hemlock, sugar maple, with various oaks, hickories and occasional species such as butternut, black walnut, black birch, American basswood, and white pine. Mid to upper slopes with south or west aspect are dominated by oaks. Oaks, and frequently yellow pines and American chestnut, occur on ridges and the most exposed sites. Openings in the forest canopy occur as the result of natural processes as well as management activities.

Desired Facility and Human Activities: These river segments are managed primarily to provide Semi-primitive Motorized or Roaded natural Recreation Opportunity Spectrum (ROS) experiences. However, some private lands will provide a more Rural ROS experience. Trail and road segments are managed to provide access to these segments and their corridors. Between stretches of undeveloped forest areas there may be a few facilities provided for the comfort and convenience of visitors in addition to developments that enhance wildlife and fisheries habitat. Opportunities to interact with others exist. Limited reliance on personal physical abilities and primitive skills will be required except for activities such as boating during high water flows. Recreational off-highway vehicle use and special uses not in keeping with the Desired Future Condition do not occur in these areas. Most types of outdoor recreation activities and wildlife enhancements are appropriate where negative impacts to scenic values, natural resources, or forest visitors can be mitigated or controlled through regulation or facility design and operation.

Occasionally, management activities include the use of motorized equipment to construct or maintain roads and trails. Vegetation may be occasionally manipulated to maintain the conditions that are consistent with the proposed designation. Trees damaged or knocked down following

unforeseen events such as wildland fire, wind, snow, and insect and disease outbreaks might be removed for public safety or to facilitate restoration toward the conditions that are consistent with the proposed designation. Tree felling and removal using motorized equipment could occur. Fire suppression activities could include the use of heavy equipment to construct firelines, while aircraft may provide detection and suppression support.

Goals and Objectives

3.C.5-Goal 1. Maintain and enhance the natural character of these rivers and their corridors by reducing adverse impacts from private development and use.

3.C.5-Objective 1.A. Acquire private lands and mineral rights from willing sellers within these river corridors.

3.C.5-Objective 1.B. Make trash clean up a priority using public information and interpretive programs.

3.C.5-Objective 1.C. Limit non-recreational special use authorizations to only those necessary for basic public service and Forest Service objectives, where no other reasonable options are available.

3.C.5-Goal 2. Protect and enhance the Outstandingly Remarkable Values that qualified these streams as Wild and Scenic Rivers. These are: recreational, aquatic fauna, and water quality values.

3.C.5-Objective 2.A. Maintain the free-flowing condition of these study-river segments. Ensure they meet federal and state water quality standards.

3.C.5-Objective 2.B. Maintain and enhance the recreational opportunities associated with these rivers and their corridors.

3.C.5-Objective 2.C. Coordinate with the Kentucky Natural Resources and Environmental Protection Cabinet (KNREPC) on management of Rock Creek as a Kentucky Wild River in accordance with current or future agreements.

3.C.5-Objective 2.D. Protect aquatic and riparian habitats that support native species.

3.C.5-Objective 2.E. Maintain a diversity of forest types in the corridor.

3.C.5-Goal 3. Provide for semi-primitive motorized or roaded natural Recreation Opportunity Spectrum (ROS) experience. However, on some private land a more Rural ROS will exist.

3.C.5-Objective 3.A. Provide access to these rivers.

3.C.5-Goal 4. Maintain and enhance the recreational opportunities associated with the area, particularly dispersed recreational activities such as fishing, canoeing, kayaking, scenic viewing, hiking, camping and backpacking.

Standards

MINERALS

3.C.5-MIN-1. Development of federally owned oil and gas is subject to the controlled surface use stipulation. All other federal mineral activity will be implemented in accordance with the Desired Future Condition and standards of this prescription area.

RECREATION

3.C.5-REC-1. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, semi-primitive motorized, and roaded natural.

VEGETATION

3.C.5-VEG-1. Vegetation management will only occur:

a) To maintain or protect existing facilities or for the construction of new facilities
b) To protect against wildland fire, insect and disease outbreaks, or invasive species that threaten to negatively impact the area's Outstandingly Remarkable Values
c) When needed to protect or restore the natural ecosystem of the area
d) To protect the public
e) To provide for fish and wildlife habitat
f) To provide for viewing of a point of interest
g) For interpretation of heritage and natural resources.

3.E. RED RIVER GORGE GEOLOGICAL AREA

Setting

This Prescription Area includes all of Red River Gorge Geological Area outside the Clifty Wilderness. However, it does include the Red River Wild and Scenic River Recreational Segment. It consists of 16,042 acres in the Middle Kentucky River Management Area. This is part of the Geological Area as classified under the authority of 36 CFR 294.1.

This Prescription Area is Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

E**mphasis of Condition:** Natural ecological processes and conditions dominate, but some human influence, primarily dispersed outdoor recreation, commonly occurs. The outstanding resource values that contributed to this area's designation as part of a Geological Area and National Natural Landmark are protected and enhanced. Attributes that qualified this area as part of the National Historic Landmark and a National Historic District are protected.

Desired Ecosystem Condition: This area provides a natural appearing, mid- to late-successional, old-aged forest environment interspersed with clifflines and rock arches. Lower slopes, and mid to upper slopes with north or east aspect, are dominated by mixed mesophytic forest composed of yellow-poplar, American beech, yellow buckeye, white ash, eastern hemlock, sugar maple, with various oaks, hickories and occasional species such as butternut, black walnut, black birch, American basswood, and white pine. Mid to upper slopes with south or west aspect are dominated by oaks. Oaks, and frequently yellow pines and American chestnut, particularly pitch pine, occur on ridges and the most exposed sites. Openings in the forest canopy occur as the result of natural processes as well as management activities.

Desired Facility and Human Activities: The area is managed primarily to provide Semi-primitive Motorized and Roaded Natural Recreation Opportunity Spectrum (ROS) experiences while protecting the area's unique heritage resources and biological species. However, at the Gladie Cultural-Environmental Learning Center site, Sky Bridge area, and Koomer Ridge Campground, a more Rural ROS is maintained. Dispersed recreation in addition to environmental and heritage education are major emphases for this area. Several trails, trailheads, and a few roads are managed to provide access. Among large expanses of forested area, some facilities, such as picnic areas, vistas, and primitive campsites, are provided for the comfort and convenience of visitors. Some developments, such as small ponds and openings, enhance wildlife habitat. In places, ample opportunities to interact with others exist. For most of the area, however, there are opportunities for solitude. Limited reliance on personal physical abilities and primitive skills are required except for activities such as rock climbing, rappelling, and backpacking. Most types of outdoor recreation activities and wildlife enhancements occur where negative impacts to natural resources and forest visitors can be mitigated or controlled through regulation, facility design and operation, or other management. Recreational off-highway vehicle use does not occur in this area.

Management activities include the use of motorized equipment to construct or maintain roads and trails. Vegetation may be manipulated to maintain conditions consistent with Goals and Objectives.

Trees damaged or knocked down following unforeseen events such as wildland fire, wind, snow, and insect and disease outbreaks might be removed for public safety or to facilitate restoration toward the conditions that are consistent with Goals and Objectives. Tree felling and removal using motorized equipment could occur. Fire suppression activities could include the use of heavy equipment to construct firelines, while aircraft may provide detection and suppression support.

Goals and Objectives

3.E-Goal 1. Maintain and enhance the natural character of the area.

3.E-Objective 1.A. Acquire private lands and mineral rights within the area from willing sellers.

3.E-Objective 1.B. Make trash clean up a priority using public information and interpretive programs.

3.E. Objective 1.C. Limit non-recreational special use authorizations to only those necessary for basic public service and Forest Service objectives, where no other reasonable options are available.

3.E-Goal 2. Maintain and enhance the recreational opportunities associated with the area, particularly dispersed recreational activities such as scenic viewing, hiking, camping, backpacking, and rock climbing.

3.E-Goal 3. Protect the values that qualified this area as part of a Geological Area and a National Natural Landmark.

3.E-Objective 3.A. Through the Limits of Acceptable Change process, manage recreation use to mitigate unacceptable resource damage and crowding that can result from heavy recreational use.

3.E-Goal 4. Preserve significant heritage resources in consultation with the State Historic Preservation Officer and interested federally recognized tribes.

3.E-Objective 4.A. Nominate the area for listing on the National Register of Historic Places as an Archeological District. Pursue nomination as a National Historic Landmark.

3.E-Objective 4.B. Complete a Heritage management Plan to identify appropriate uses and treatment for heritage resources.

3.E-Goal 5. Protect and enhance the unique biological species in this area.

3.E-Objective 5.A. Maintain a diversity of forest types through direct management.

3.E-Goal 6. Cultivate the public's appreciation of this area's natural and heritage resources and ecological processes through environmental education and interpretation.

3.E-Goal 7. Manage this area to primarily provide for non-motorized dispersed recreational activities in Semi-primitive Motorized and Roaded Natural ROS experiences.

3.E-Objective 7.A. Retain the roadless characteristics of the Wolfpen Inventoried Roadless Area located between Clifty Wilderness and State Route 77.

Standards

MINERALS

3.E-MIN-1. The surface is not to be disturbed during any federal mineral exploration or development activity; development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

RECREATION

3.E-REC-1. Camping is not permitted within 100 feet of the base of any cliff, or the back of any rockshelter unless the Forest Service designates a site.

3.E-REC-2. Prohibit building, maintaining, attending, or using a fire, campfire, or stove fire within 100 feet of the base of a cliff, or the back of any rockshelter, unless a site is designated by the Forest Service.

3.E-REC-3. Allow no horses or other livestock in this area except on designated trails or as specifically permitted.

3.E-REC-4. No trails will be designated for off-highway vehicle use.

3.E-REC-5. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, semi-primitive motorized, and roaded natural.

VEGETATION

3.E-VEG-1. Vegetation management will only occur:

a) To maintain or protect existing facilities or for the construction of new facilities
b) To protect against wildland fire, insect and disease outbreaks, or invasive species that threaten to negatively impact the area's resource values
c) When needed to protect or restore the natural ecosystem of the area
d) To protect the public
e) To provide for fish and wildlife habitat
f) To provide for viewing of a point of interest
g) For interpretation of heritage and natural resources.

PRESCRIBED FIRE

3.E-FIRE-1. Prior to igniting prescribed fires, conduct a cursory survey within burn units and adjacent clifflines for heritage resources and protect these resources during the burn.

3.F. NATURAL ARCH SCENIC AREA

Setting

This Prescription Area contains approximately 1,065 acres and is located in the Cumberland River Management Area. The Secretary of Agriculture under Regulation U-3 designated this area.

This Prescription Area is Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions.

Desired Future Condition

Emphasis of Condition: Natural ecological processes and conditions dominate, but some human influence, primarily dispersed recreation, commonly occurs. The public's appreciation of these unique scenic features and the natural setting is cultivated. Unique geological features including rock arches, rock bridges, rockshelters, and "rockhouses" are common in this area.

Desired Ecosystem Conditions: This area provides a natural appearing, mid- to late-successional, old-aged forest environment interspersed with unique geological formations. Lower slopes, and mid to upper slopes with north or east aspect, are dominated by mixed mesophytic forest composed of yellow-poplar, American beech, yellow buckeye, white ash, eastern hemlock, sugar maple, with various oaks, hickories and occasional species such as butternut, black walnut, black birch, American basswood, and white pine. Mid to upper slopes with south or west aspect are dominated by oaks. Oaks, and frequently yellow pines and American chestnut, occur on ridges and the most exposed sites. Openings in the forest canopy occur as the result of natural processes as well as management activities.

Desired Facilities and Human Activities: The area is managed primarily to provide Semi-primitive Motorized and Roaded Natural Recreation Opportunity Spectrum (ROS) experiences while protecting the area's unique heritage resources and biological species. However, at developed recreation areas, a more Rural ROS is maintained. Dispersed recreation in addition to environmental and heritage education are a major emphasis for this area. Trails and trailheads are managed to provide access. Some developments, such as small ponds and openings, enhance wildlife habitat. In places, ample opportunities to interact with others exist. For most of the area, however, there are opportunities for solitude. Limited reliance on personal physical abilities and primitive skills are required except for activities such as backpacking. Outdoor recreation activities and wildlife enhancements occur and are compatible with other resource values. Recreational off-highway vehicle use and special uses not in keeping with the Desired Future Condition do not occur in this area.

Occasionally, management activities include the use of motorized equipment to construct or maintain roads and trails. Vegetation may be occasionally manipulated to maintain the conditions that are consistent with the designation. Prescribed fire may be used to restore and maintain the yellow pine forests and rare species in the area, and maintain the upland oak forests in the area. Trees damaged or knocked down following unforeseen events such as wildland fire, wind, snow, and insect and disease outbreaks might be removed for public safety or to facilitate restoration toward the conditions that are consistent with the designation. Tree felling and removal using motorized

equipment could occur. Fire suppression activities could include the use of heavy equipment to construct firelines, while aircraft may provide detection and suppression support.

Goals and Objectives

3.F-Goal 1. Maintain and enhance the natural character of the area by reducing adverse impacts from private development and use.

3.F-Objective 1.A. Acquire private lands and mineral rights within the area from willing sellers.

3.F-Objective 1.B. Make trash clean up a priority using public information and interpretive programs.

3.F-Objective 1.C. Limit special use authorizations to only those necessary for basic service to the general public and Forest Service objectives, where no other reasonable options are available.

3.F-Goal 2. Protect the values that qualified this area as a Scenic Area.

3.F-Goal 3. Maintain and enhance recreational opportunities associated with the area, particularly dispersed activities such as scenic viewing and hiking.

3.F-Goal 4. Provide a natural appearing, mid- to late-successional, old-aged forest environment interspersed with vistas of clifflines and rock arches.

3.F-Goal 5. Provide primarily non-motorized dispersed recreational activities in Semi-primitive Motorized and Roaded Natural ROS experiences.

3.F-Goal 6. Use environmental education and interpretation to cultivate the public's appreciation of the area's natural and heritage resources and ecological processes.

3.F-Objective 6.A. Protect Indian sacred sites.

3.F-Goal 7. Protect and enhance the unique biological species in this area.

3.F-Objective 7.A. Maintain a diversity of forest types in the area.

3.F-Objective 7.B. Maintain the historic American chaffseed location in habitat suitable for the species using appropriate means.

Standards

MINERALS

3.F-MIN-1. The surface is not to be disturbed during any federal mineral exploration or development activity. Development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

3.F-MIN-2. Removal of common-variety minerals is prohibited.

RECREATION

3.F-REC-1. No trails will be designated for off-highway vehicle use.

3.F-REC-2. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, semi-primitive motorized, and roaded natural.

Campers enjoy one of the many campgrounds on the Daniel Boone National Forest.

3.H.1. RUFFED GROUSE EMPHASIS

Setting

This Prescription Area consists of one location in the Cumberland River Management Area and another in the Licking River Management Area totaling 10,500 acres.

This Prescription Area is Suitable for Timber Production (Scheduled Harvest) – Non-timber emphasis**.**

Desired Future Condition

Emphasis of Condition: These areas are managed to favor species that use young-age forest conditions with an emphasis on providing high-quality ruffed grouse habitat. They are cooperatively managed with the Kentucky Department of Fish and Wildlife Resources (KDFWR) to provide sport hunting and viewing opportunities.

Desired Ecosystem Conditions: Ruffed Grouse Emphasis areas represent an early-aged forest mosaic within the larger mature forest landscape. Species associated with seedling/sapling forest habitat flourish and contribute to overall landscape diversity. Previously declining populations of bird species dependant on, or associated with, these habitat types, such as the prairie warbler, American woodcock, yellow-breasted chat, common yellowthroat, and orchard oriole are now increasing along with the ruffed grouse population. A combination of vegetation manipulation and prescribed fire result in a forest dominated by tree species that are intolerant to heavy shade. Management activities and occasional natural disturbances create canopy openings, generally around 20 acres in size. Temporary openings, the result of re-vegetation and stabilization of log landings and temporary roads, may be found.

Desired Facilities and Human Activities: Cooperative management focuses on sport hunting and bird watching. The KDFWR is primarily responsible for management of game populations, while the Forest Service is primarily responsible for habitat management. The KDFWR may structure hunting regulations to address area-specific considerations to achieve mutual goals. Roads and trails are scattered throughout the area. Some roads may be closed seasonally to protect resource values. Silvicultural and habitat treatments routinely occur, many of which result in the sale of forest products. Evidence of prescribed fire occurs in many areas. Foot travel is encouraged, and there are extensive opportunities to access seedling/sapling stands. Grouse “drumming” is often heard. Motorized vehicles are restricted to developed roads. Hiking, biking, and horse trails may be present throughout the area. Visitors find themselves in a highly diverse forest landscape with a variety of wildlife viewing opportunities. Sights and sounds of other people and vehicles may occasionally be present. Federal minerals may be developed under standard lease terms.

Goals and Objectives

3.H.1-Goal 1. Develop appropriate early-aged forest conditions to improve structural diversity and sustain an abundance of ruffed grouse and associated species.

3.H.1-Objective 1.A. Establish and maintain a high-canopy overstory matrix with approximately 8 percent in the 0-5 year age class (a 60-year rotation).

3.H.1-Objective 1.B. Develop dense hardwood-dominated seedling/sapling stands greater than 5 acres in size, preferable around 15 – 20 acres, with 20,000 or more stems per acre, using even-aged silvicultural systems.

3.H.1-Objective 1.C. Develop habitat sufficient to sustain a grouse population of up to 30 birds per 640 acres.

3.H.1-Objective 1.D. Identify and develop a similar suitable unit for ruffed grouse management emphasis within the Upper Kentucky River Management Area.

Standards

RECREATION

3.H.1-REC-1. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiences of roaded natural and roaded modified.

WILDLIFE

3.H.1-WLF-1. Drumming logs must be retained within regenerated stands, at upper slope positions, and aligned parallel to the slope.

3.H.1-WLF-2. Where grapevine control measures are necessary to develop and sustain suitable forest conditions, retain 1-2 acre grape arbors at a density of at least two per 160 acres.

5.A. COMMUNICATIONS SITES

Setting

Existing communications sites on the Daniel Boone National Forest are identified by district and type of use in Table 3 - 2.

Table 3 - 2. Communications Sites and Use Type.

Communications Sites by District	Commercial Use	Administrative Use
Morehead RD		
Triangle Mountain	X	
McCausey Ridge	X	
Stanton RD		
Pine Ridge		X
London RD		
Indian Trail Tower	X	
Indian Ridge	X	
McKee	X	
Baldrock		X
Somerset RD		
Mt. Victory	X	
Stearns RD		
Wiborg	X	
Redbird RD		
Bell Tower		X
Big Double		X
Cherry Tree		X
Hector	X	
Lucinda		X

This Prescription Area consists of approximately 20 acres across all Management Areas and is classified as Unsuitable for Timber Production (all cleared non-forest land).

Desired Future Condition

Emphasis of Condition: The typical communications site is located on an accessible high point that encompasses several acres. Usually a security fence is placed around the communication facility. These are non-forest, small cleared sites containing communication tower(s). Most of these areas have associated special use authorizations.

Desired Ecosystem Conditions: Highly modified non-forest condition (predominantly grasses) is maintained.

Desired Facilities and Human Activities: Communications sites have adequate road access, one or more towers and equipment storage facilities located on open sites. These sites are infrequently visited by the permit holder(s), usually for maintenance purposes. Other activities are not encouraged at these sites. However, hiking may occur along roads that access communications sites.

Goals and Objectives

5.A-Goal 1. Maintain a non-forest ground cover to protect the integrity of the soil and site and to buffer the towers and facilities from wildland fire.

5.A-Goal 2. Minimize potential for migratory bird mortality associated with these sites.

5.A Objective-2.A. Encourage modification of existing communication towers to minimize the potential for migratory bird mortality associated with these sites.

Standards

LANDS

5.A-LAND-1. Non-Forest Service communications sites require special use authorization.

MINERALS

5.A-MIN-1. The surface is not to be disturbed during any federal mineral exploration or development activity; development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

RECREATION

5.A-REC-1. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, semi-primitive motorized, roaded natural, and rural.

WILDLIFE

5.A-WLF-1. Design any new towers and ridge-top developments to minimize collision impacts by migratory birds.

5.C. SOURCE WATER PROTECTION

Setting

This Prescription Area -- Zones 1 and 2 -- protects municipal drinking water sources and was developed in close cooperation with the Kentucky Division of Water (KDOW). Similar to the approach taken by the KDOW, each source water protection area is divided into zones[25]:

Zone 1 – Begins one-quarter mile below the water intake site and extends five miles upstream (one mile up-channel in lakes) of the intake along any stream that is 3rd order or larger (on 1:24,000 scale topographic map). This zone includes the surface water and extends one-quarter mile from the shores of these streams or lakes (or nearest watershed boundary if within one-quarter mile).

Zone 2 – Extends the protection area to 10 miles (5 miles up-channel in lakes) above the water intake along the source stream and any tributaries that are 3rd order or larger (on 1:24,000 scale topographic map). It includes Zone 1 and increases the total width to one-half mile from each side of these streams or lakes (or nearest watershed boundary if it is within one-half mile).

Zone 3 – Extends 25 miles (10 miles up-channel in lakes) above the water intake along the source stream and any tributaries that are 3rd order or larger (on 1:24,000 scale topographic map). It includes the area of any 6th level hydrologic unit adjacent to these streams. Zone 3 is not part of this Prescription Area and is governed by Forestwide management direction.

This Prescription Area -- Zones 1 and 2 -- consists of approximately 34,015 acres across all Management Areas, of which 1,725 acres are surface water.

The portion of Zone 1 within 300 feet of a water body is Unsuitable for Timber Production – Tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain Desired Future Conditions. Approximately 15,020 acres of the prescription area are Suitable for Timber Production (Scheduled Harvest) – Non-timber emphasis.

Desired Future Condition

Emphasis of Condition: This area is managed to produce a relatively stable and continuous flow of clean, potable water to catchments or intakes of public water supplies.

Desired Ecosystem Conditions: Older forests characterize the first 300 feet of Zone 1. This zone is void of potential contaminants; stream sediment is at natural background levels.

The remainder of Zone 1 and Zone 2 are characterized by a range of forest ages with a few areas of regenerating forest resulting from long-rotation harvests. A relatively natural background level of sediment enters into local water supply catchments; no other pollutants occur.

Water quality conditions in both zones meet state Beneficial Use Standards for drinking water supplies.

Desired Facilities and Human Activities: A forest of little new development, low ground disturbance, and low road densities characterizes Zone 1. Dumps are cleaned up. Existing

[25] All distances relate to "map distances".

recreational facilities are maintained in top condition. Road, trail, and facility construction are relatively minor and very limited in nature. Lake shoreline stabilization is emphasized.

Zone 2 is characterized by low use that generates small, short-term amount of sedimentation and little or no contaminants compared to background levels. Dumps are cleaned up. Existing marinas, sewage treatment plants and recreational facilities are maintained in top condition and monitored to be within State water quality standards.

Goals and Objectives

5.C-Goal 1. Provide clean water to public water supply intakes.

5.C-Objective 1.A. Meet or exceed state water quality and drinking water standards.

5.C-Objective 1.B. Close and/or rehabilitate roads determined to be causing degradation to water quality.

5.C-Objective 1.C. Stop illegal land and water dumping; take preventative measures to stop chemical spills and leaks.

5.C-Objective 1.D. Stop dumping of wastewater into source drinking waters through education programs and/or law enforcement action.

5.C-Objective 1.E. Stabilize reservoir shorelines where practical.

5.C-Objective 1.F. Take action to eliminate straight pipe sewage dumping that affects National Forest System lands.

5.C-Objective 1.G. Marinas, sewage treatment plants, and storage facilities will be maintained to prevent chemical spills and leaks.

5.C-Objective 1.H. Stabilize bare or disturbed soil.

5.C-Goal 2. Provide a relatively stable and continuous flow to public water supply intakes.

5.C-Objective-2.A. Five percent of each source water unit beyond the first 300-foot zone should be in woodlands and/or 0-10 aged forest. This includes the effects of catastrophic events. This approximately 200 year rotation is designed to maintain a stable forested landscape within the Prescription Area.

5.C-Goal 2.A. Promote older forest conditions within the first 300 feet of Zone 1.

Standards

LANDS

5.C-LAND-1. New or replacement pipelines transporting materials that could adversely affect water quality must include protective measures such as double walls and leak detection devices.

MINERALS

5.C-MIN-1. Within zone 1: the surface is not to be disturbed during any federal mineral exploration or development activity; development of federally owned oil and gas is subject to the No-Surface-Occupancy stipulation.

5.C-MIN-2. Within zone 2: development of federally owned oil and gas is subject to the controlled surface use stipulation; all other federal mineral activity will be implemented in accordance with the Desired Future Condition and standards of this prescription area.

ROADS/ENGINEERING

5.C-ENG-1. Road or facility construction may be considered in Zone 1, only if site-specific analysis shows that new roads or facilities are compatible with state drinking water standards (401 KAR Chapter 8).

5.C-ENG-2. No hauling of Tier II chemicals[26] is permitted on National Forest System roads. The exception to this standard is the hauling of petroleum to marinas.

5.C-ENG-3. No new chemical storage facilities[27] will be constructed in Zone 1. Old facilities will be maintained or removed.

RECREATION

5.C-REC-1. No trails designated for off-highway vehicle use will be allowed in Zone 1, except for minor encroachments to avoid steep terrain.

5.C-REC-2. Areas will be managed to meet or exceed Recreation Opportunity Spectrum experiencess of semi-primitive non-motorized, semi-primitive motorized, roaded natural, and rural.

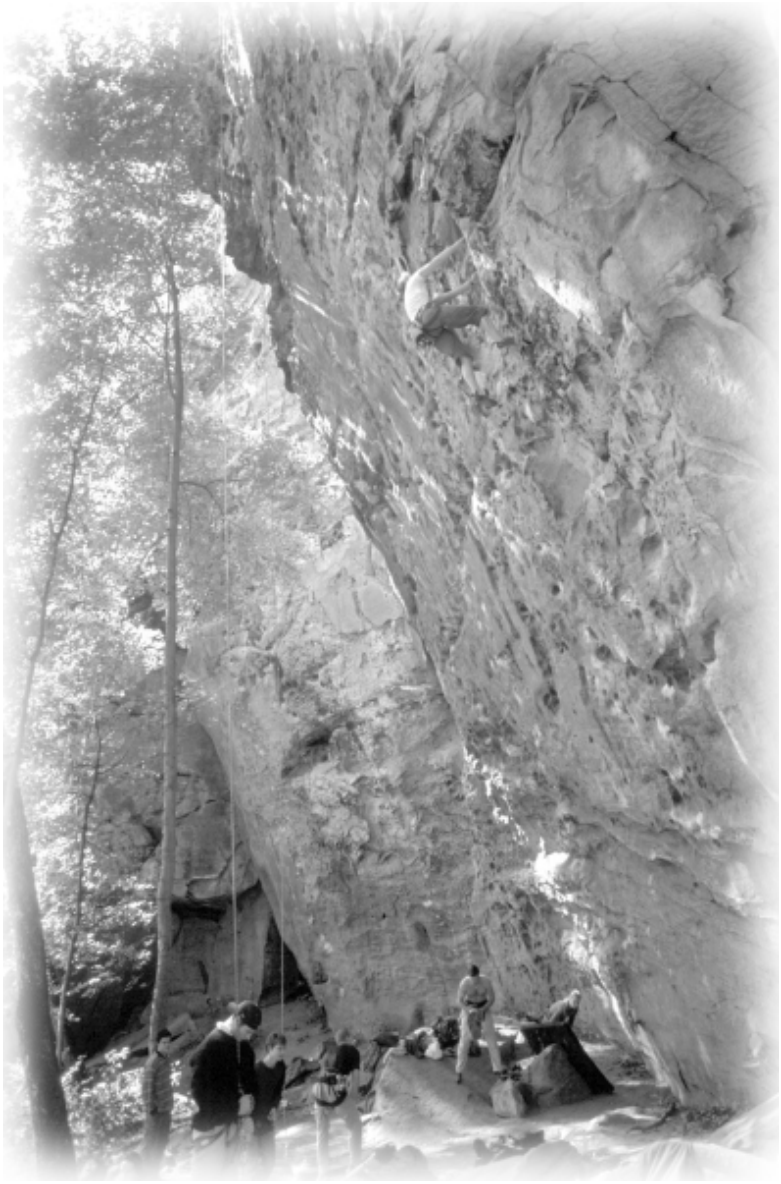
VEGETATION

5.C-VEG-1. Timber harvesting and associated road construction will not occur within 300 feet of a perennial water body in Zone 1.

5.C-VEG-2. Pesticide use is not allowed in Zone 1 except where necessary to control the spread of insect or disease outbreaks.

[26] Tier II chemicals are those having Material Safety Data Sheets (MSDS) and in quantities greater than 10,000 pounds for "hazardous substances" or smaller quantities as listed in 40 CFR Part 355 for "extremely hazardous chemicals".

[27] Chemical storage facilities are defined in KRS Chapter 39E.



Rock climbing in the Red River Gorge, Stanton Ranger District.

Chapter 4

MANAGEMENT AREA DESCRIPTIONS

The DBNF is divided into four Management Areas (MA) based on the Forest's four main river basins. These are the Licking River MA, the Middle Kentucky River MA, the Upper Kentucky River MA, and the Upper Cumberland River MA (Figure 4 - 1). The areas differ socially, physiographically and biologically as well as hydrologically. The Management Areas have enough difference in the ecological classification system to make it easier or less expensive to do some activities in some Management Areas and more expensive or more difficult in others. The amount and distribution of Proposed Endangered, Threatened and Sensitive is different between Management Areas. The access, visitor use and the economic development of management areas are different. The management areas will be used primarily for establishing monitoring protocols, track accomplishments and identify differences in effectiveness of management activities. The cost and ease of doing management activities may influence the amount of activities that will occur in each Management Area.

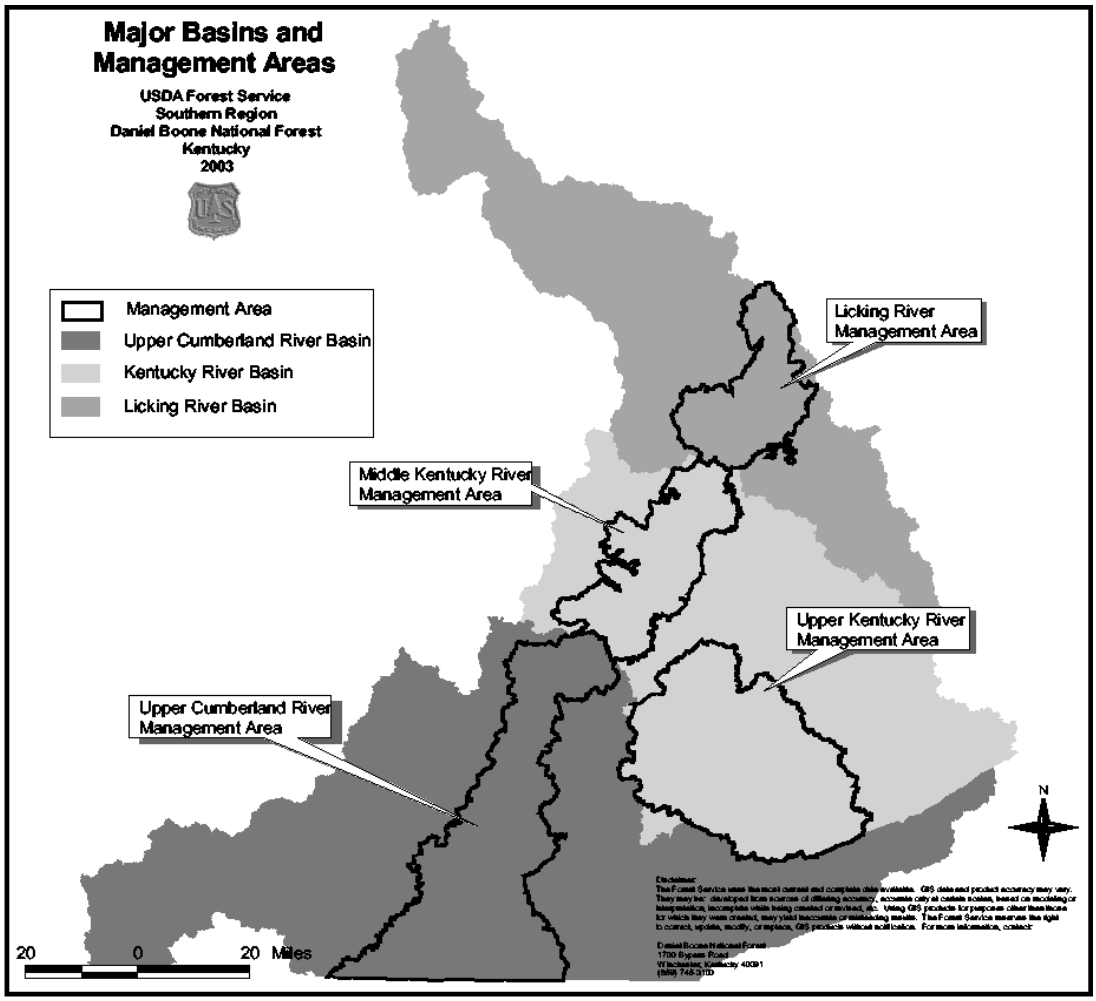


Figure 4 - 1. Management Areas and associated watersheds.

LICKING RIVER MANAGEMENT AREA

This area contains 117,934 acres of land managed by the Daniel Boone National Forest. The Licking River MA includes six landtype associations (LTAs) in two ecological sections and three ecological subsections. Physiographically, these LTAs range from areas of shallowly dissected rolling plateau without escarpment, to areas of deeply dissected plateau with escarpment. Karst features are uncommon in this MA. River bottoms can be as much as a mile wide. Soils range from shallow to deep silt and silt clay loams on uplands to generally deep silty clay and clay loams on slopes. River bottom soils include clayey and silty clay loams. The vegetation on the rolling plateau and upper edge of the escarpment is dominated by oak forest. Mixed mesophytic forest dominates much of the vegetation below the escarpment plateau. River bottom forests are primarily flood plain forests. A few plant and animal PETS species and habitat for Conservation species occur in this MA. About one-third of the plant life benefits from periodic fire and is usually associated with open oak forest. A few rare species can be found among the aquatic fauna of this MA. Approximately 17 percent of the lands managed by the DBNF are within the Licking River MA.

The broad valleys provide sites for agricultural production, communities and scattered businesses. Travel through the northern part of the area is generally within these wide valleys, which provide a pastoral setting with naturally appearing forested rolling hills behind. Roads are found more commonly along the ridge-tops in the southern half of this MA. Creation of openings, new construction, and other alterations to the valley landscape do not significantly alter the form line and texture of the area. Increased residential development on the hillsides and hilltops is changing the viewshed and altering the existing character of the area particularly in the Cave Run Lake area.

MIDDLE KENTUCKY RIVER MANAGEMENT AREA

This area contains 83,247 acres of land managed by the Daniel Boone National Forest. The Middle Kentucky River MA includes eight landtype associations (LTAs) in one ecological section and three ecological subsections. Physiographically, these LTAs are primarily areas of deeply dissected plateau with escarpment, small areas of shallowly dissected rolling plateau. Karst features are frequent along the western portion of this MA. River bottoms are generally narrow with some flood plain development. Soils range from shallow to deep silt and silt clay loams on uplands to generally deep silty clay and clay loams on slopes. River bottom soils include clayey and silty clay loams. The vegetation on the rolling plateau and upper edge of the escarpment is dominated by oak forest, but included areas of southern yellow pine domination prior to the recent southern pine beetle epidemic. Mixed mesophytic forest dominates much of the vegetation below the escarpment plateau. River bottom forests are a mix of flood plain and riverfront forests. Several plant and animal PETS species and habitat for Conservation species occur in this MA. About one-third of those plants benefits from periodic fire and is usually associated with open southern yellow pine or oak forest. The aquatic fauna of this MA includes few rare species. Approximately 12 percent of the lands managed by the DBNF are within the Middle Kentucky River MA.

Travel through this area is along both the flat ridge-tops and the narrow to wider (up to a quarter mile) bottoms. The landscape changes from scattered homes and businesses in and out of forests in the narrower valleys and ridge-tops to a pastoral setting found in the wider valleys and plateau. The effects of clearing, building, and timber harvesting can be significant to the form line and texture of

the surrounding area or blend easily with the existing activities in the area depending on the location within this section.

UPPER CUMBERLAND RIVER MANAGEMENT AREA

This area contains 346,864 acres of land managed by the Daniel Boone National Forest. The Upper Cumberland River MA includes seven landtype associations (LTAs) in two ecological sections, and three ecological subsections. Physiographically, these LTAs range from areas of shallowly dissected rolling plateau without escarpment, to areas of deeply dissected plateau, some with and some without escarpment. Karst features are abundant in some areas along the western edge of the MA. River bottoms are generally narrow and with limited flood plain. Soils range from shallow to deep sandy loams and silt loams on uplands to generally deep silty clay loams on slopes. Most river bottom soils are clay loams. Prior to southern pine beetle epidemic of the late 1990s, southern yellow pine dominated much of the vegetation on the rolling plateau and upper edge of the escarpment. Much of the vegetation below the escarpment and in the deeply dissected plateau is dominated by mixed mesophytic forest. River bottom forests are primarily narrow bands of river front forest. The Forest's highest concentration of PETS species occurs in this MA. About 50 percent of the PETS and Conservation plant species benefit from periodic fire and are usually associated with open southern yellow pine or southern yellow pine-oak forest. The aquatic fauna of this MA is among the richest in the nation, and includes a higher proportion of federally listed mussels and fish than any other MA on the forest. Approximately 50 percent of the lands managed by the DBNF are within the Upper Cumberland River MA.

Travel through this area is along the broad, flat plateau tops and the narrow to wider (up to a half mile) bottoms. The landscape changes from scattered homes and businesses in and out of forests in the narrower valleys and ridge-tops to a pastoral setting found in the wider valleys and plateau. The effects of clearing, building, and timber harvesting can be significant to the form line and texture of the surrounding area or blend easily with the existing activities in the area depending on the location within this section.

UPPER KENTUCKY RIVER MANAGEMENT AREA

This area contains 145,683 acres of land managed by the Daniel Boone National Forest. The Upper Kentucky River MA includes five landtype associations (LTAs) in two ecological sections, and three ecological subsections. Physiographically, these LTAs are predominantly areas of deeply dissected plateau without escarpment. A small area of escarpment occurs along Pine Mountain at the eastern edge of the MA. Karst features are limited to Pine Mountain. River bottoms are moderately wide with limited to extensive flood plains. The smaller stream valleys tend to be much narrower with less developed flood plains. The slopes in this MA are generally longer than in the other MAs. Soils range from shallow to deep sandy loams and silt loams on uplands, to generally deep silty clay loams on slopes. Most river bottom soils are silty clay and clay loams. Oak dominates vegetation on the dissected plateau while mixed mesophytic forest dominates vegetation on lower and north slopes. River bottom forests are primarily flood plain forest. Several Sensitive and Conservation species occur in Kentucky only in and near this MA. Most of the Sensitive and Conservation plant species benefit from periodic fire and are usually associated with open oak forest. Several higher elevation

mammals, birds, and snails occur in this MA. Only some of the birds occur elsewhere on the Forest. This portion of the Kentucky River basin is the last stronghold for a number of Kentucky State Nature Preserves Commission listed "threatened or endangered" and Forest Service "sensitive" aquatic animal species. Approximately 21 percent of the lands managed by the DBNF are within the Upper Kentucky River MA.

Most of the valleys are narrow, as are the mountaintops. Few roads follow the mountaintops. Homes are scattered throughout the forested landscape along the valley roads. Whenever the valleys broaden to form wider flood plains, communities can be found. There is limited land for agriculture although many homes have small garden plots and pastures. Changes to the naturally appearing forested area are readily apparent if close to the valley floor. Views are limited by vegetation and terrain. Access through this area is slow and limited by the terrain.

Table 4 - 1. The distribution of Prescription Area acreage by Management Area (MA).

Prescription Area	LICKING RIVER	MIDDLE KENTUCKY RIVER	UPPER CUMBERLAND RIVER	UPPER KENTUCKY RIVER
1.A. Research Natural Area[1]	0	308	189	161
1.C. Cliffline Community	9,060	19,525	63,433	19,187
1.E. Riparian Corridor	31,907	20,888	80,958	21,626
1.I. Designated Old-Growth	4,521	1,226	7,558	1,899
1.J. Significant Bat Caves	751	2,783	2,474	107
1.K. Habitat Diversity Emphasis	70,858	33,164	175,835	96,034
2.A. Clifty Wilderness	0	12,646	0	0
2.B. Beaver Creek Wilderness	0	0	4,791	0
3.B. Large Reservoirs	13,850	0	16,823	0
3.C.1. Red River National W&S River: Wild River Segment	0	683	0	0
3.C.2. Proposed W&S River: Marsh Creek- Wild River	0	0	1,244	0
3.C.3. Red River National W&S River: Recreational River Segment	0	1,440	0	0
3.C.4. Proposed W&S River: Cumberland River, War Fork Creek, Rockcastle River- Scenic Rivers	0	1,466	5,622	0
3.C.5. Proposed W&S River: Rock Creek and Marsh Creek Recreational Rivers	0	0	6,184	0
3.E. Red River Gorge Geological Area (Without Clifty Wilderness)[2]	0	16,042	0	0
3.F. Natural Arch Scenic Area	0	0	1,065	0
3.H.2. Ruffed Grouse Emphasis	4,728	0	5,807	0
5.B. Source Water Protection[3]	12,563	1,208	19,977	266

[1] 1.A. 189 acres in the existing Rock Creek RNA; 469 acres in proposed Elisha Branch and Tight Hollow RNAs.

[2] 3.E. Red River Gorge Prescription Area does not include Clifty Wilderness.

[3] 5.B. Source Water Protection Zone 1 and Zone 2.

Chapter 5

IMPLEMENTATION, MONITORING, AND EVALUATION

PLAN IMPLEMENTATION

The Forest Plan will be implemented through a series of project-level decisions based on appropriate site-specific analysis and disclosure. It does not contain a commitment to select any specific project. Instead, it provides a framework of Desired Future Conditions with Goals and Objectives to guide project proposals. Projects are proposed to solve resource management problems, move the Forest environment toward the Desired Future Conditions, and supply goods and services to the public. The project area is assessed to determine the Desired Future Condition in contrast to the existing condition and the opportunities in the area. These projects are analyzed to determine possible alternative solutions, and after public involvement, the responsible official makes the decision.

In addition to direction provided by the Forest Plan, projects are implemented through direction found in the directive system (Forest Service Manual and Handbooks), annual program budget, and other implementation guides that are not part of the decisions made in the Forest Plan, but provide specifics on how to implement projects. Examples of implementation guidance includes:

a) Capital investment program

b) Forest and public lands highways program

c) Intermodal Surface Transportation Efficiency Act program

d) Fire Management Plan

e) Research Natural Areas establishment records and plans

f) Threatened and Endangered species recovery plans

g) Memoranda of understanding

The Forest Supervisor has overall responsibility for Forest Plan implementation. Implementation will occur through the identification, selection, and execution of projects or actions designed to meet the Forest Plan's management direction. Identification of projects will occur in several different ways. The Forest Service will develop project proposals in response to specific management needs or following an assessment of the best way to implement the Plan on a specific portion of the forest. In some instances, project proposals result from applications made to the agency for use and occupancy of National Forest System lands. However project proposals are generated, it is necessary for other plans or instruments, budget proposals, and any specific management practices to be consistent with the Forest Plan. Implementation of project proposals depends upon many factors, including budgets. However, projects must be consistent with the Forest Plan.

The 2004 Forest Plan supersedes the 1985 Plan. All outstanding permits, contracts, cooperative agreements and other instruments for occupancy and use of lands included in the 1985 Plan will be brought into agreement with the 2004 Forest Plan, subject to the valid existing rights of the parties involved. This will be done as soon as practical, generally within three years of the date of the Plan.

Subsequent administrative activities affecting such lands, including budget proposals, will be based on the 2004 Forest Plan.

Often projects and management activities will be proposed following an assessment of how best to achieve the Desired Future Conditions, Goals, and Objectives in a portion of the forest. These plan-to-project assessments will generally be based on a watershed or land area and will provide an integrated look at what actions may be necessary in the area under consideration. The assessments are the intermediate step between programmatic Forest Plan management direction and the site-specific actions taken to implement that direction. The assessments do not directly result in decisions, but will provide options that may yield future projects.

This concept of Plan implementation begins with Forestwide, programmatic direction, leading to site-specific actions, followed by monitoring and evaluation of the results, which are used to make adjustments to programmatic direction. This strategy is also iterative, with information flowing in either direction within various stages of the process. For example, if a proposed practice, project, or action is determined to be incompatible with the direction in the Forest Plan, one of three things will occur:

a) The proposal will be revised to make it compatible with the 2004 Forest Plan

b) The proposal will be abandoned

c) The proposal will be implemented after the 2004 Forest Plan has been amended to provide for the proposed activity.

Recurring conflicts may result in review of the relevant Plan direction through the monitoring and evaluation process to determine whether a Plan amendment or revision is needed.

PLAN AMENDMENTS AND REVISION

A Forest Plan can be amended to ensure that it remains a viable, flexible document for managing the Daniel Boone National Forest. Based on 1982 Planning Regulations, a Plan must be revised on a 10-year cycle or at least every 15 years. It also may be revised whenever the Forest Supervisor determines that conditions or demands in the area covered by the Plan have changed significantly. A five-year review will be conducted to determine whether conditions or demands have changed significantly.

PURPOSE OF MONITORING AND EVALUATION

Monitoring and evaluation provide information to determine whether programs and projects are meeting Forest Plan direction, and whether the cost anticipated to implement the Forest Plan coincides with actual costs. Monitoring and evaluation is required by NFMA implementing regulations (36 CFR 219.12(k)) to determine whether requirements of the regulations and Forest Plan are being met.

This Chapter establishes Monitoring Questions that are to be answered over the course of Forest Plan implementation. Monitoring questions address whether the Desired Future Conditions, Goals and Objectives of the Forest Plan are being met and whether Forest Plan Standards are effective.

Monitoring Questions are part of the Forest Plan and are stated in terms that will direct *what* will be monitored, but are not so specific as to address *how* monitoring will be accomplished.

Monitoring Questions will be further refined during Forest Plan implementation into Monitoring Elements and Task Sheets, which are more detailed, specific and measurable than the Monitoring Questions themselves. Monitoring Elements and Task Sheets may be modified and prioritized to guide monitoring activities over the course of Forest Plan implementation. The Monitoring Summary Table and sample Task Sheet (Appendix D) demonstrate the relationships between Forest Plan Goals, Objectives, Standards and Monitoring Questions, and indicate the nature of Monitoring Elements and monitoring details that are to be further developed during Forest Plan implementation. The Monitoring Summary Table and sample Task Sheet are presented here only for information and may be modified as needed to address changes in needs, priorities, availability of personnel and funding. As part of comprehensive resource management planning for the Red River Wild and Scenic River segment, a separate monitoring and implementation plan can be found in Appendix F.

The Monitoring Questions were developed to address three types of monitoring:

a) Implementation monitoring
b) Effectiveness monitoring
c) Validation monitoring.

Implementation monitoring is intended to satisfy the question: *Did we do what we said we would do?* It determines whether plans, prescriptions, projects, and activities are implemented as designed and in compliance with Forest Plan Goals, Objectives, and Standards. Evaluation of implementation monitoring may require adjustment of prescriptions and targets or changes in plan or project administration.

Effectiveness monitoring is meant to satisfy the question: *Did what we said we would do accomplish our Goals and Objectives — or, did it work?* It determines whether plans, prescriptions, projects, and activities are effective in meeting management direction, Objectives, and Standards. Results of effectiveness monitoring are used to adjust Forest Plan Objectives, targets, management prescriptions, Standards, conservation practices, mitigation measures, and other best management practices. It could result in a change to, or amendment of, the Forest Plan.

Validation monitoring is meant to satisfy the question: *Are our assumptions valid, or are there better ways of meeting our Goals and Objectives?* It is designed to ascertain whether the initial assumptions and coefficients used in developing the Forest Plan were correct or if there is a better way to meet Forest planning regulations, policies, Goals, and Objectives. Evaluation of this type of monitoring can result in amendment to the Forest Plan and may be used to recommend changes in laws, regulations, or policies that affect both the Plan and project implementation.

Monitoring and evaluation are distinct activities. The monitoring phase generally includes the collection of data and information, either by observation, direct measurement or compiling data from appropriate sources. Evaluation is the analysis of this data and information, and is used to assess if the Forest Plan is being implemented correctly and whether it needs to be changed. Forest Plan Monitoring and Evaluations will be reported annually in the Forest Monitoring and Evaluation Report.

Forest Plan amendments and revisions should be responsive to changes that affect the Forest Plan, and may be needed at any time if a Forest Plan becomes out of date in some way. Within an adaptive management[28] framework, the need to amend or revise the Forest Plan may result from:

a) Recommendations of an interdisciplinary team, based on evaluation and monitoring results
b) Changes in agency policy and regulations
c) Planning errors found during Forest Plan implementation
d) Changes in physical, biological, social, or economic conditions.

The evaluation of findings under the following Monitoring Questions will lead forest managers to these determinations.

MONITORING QUESTIONS

1. Are rare ecological communities being protected, maintained, and restored?

One Forest Plan Goal, along with related Objectives and Standards, is to inventory, maintain and restore rare communities. To monitor accomplishment of these provisions and the effects that overall Forest Plan implementation will have on rare communities, trends in number of occurrences, locations, and conditions, and effects of maintenance and restoration activities will be tracked.

[28] The concept of adaptive management is foundational for planning and Forest Plan implementation in a dynamic environment. Regulations require that Forest Plans be revised periodically (36 CFR 219.10(g)). However, Forest Plans may need to be more dynamic to account for changed resource conditions (such as large storms or insect outbreaks), new information or findings of science, or new regulations or policies.

2. Are landscape- and stand-level composition, structure, and function of major forest communities within desirable ranges of variability?

Success in maintaining and restoring composition, structure, and function of forest ecosystems within desired ranges of variability is reflected by both changes in forest condition and by levels of management and other effects that are shaping these communities. Monitoring will include tracking the abundance of major forest cover/community types and levels of management activities conducted to maintain and restore desired conditions. Population and habitat trends of Management Indicator Species will be monitored to help indicate effects of National Forest management within selected communities.

Management Indicator Species	Reasons for Selection
Black-throated green warbler	Changes in presence and abundance of black-throated green warblers in mature mesic cove deciduous forests will be used to help indicate the effectiveness of management at providing dense understory and midstory structure within these forest communities.
Pine warbler	Trends in populations of this species will be used to help indicate the effectiveness of management at restoring, and maintaining remaining mature pine forests in open, fire-maintained conditions.
Acadian flycatcher	Trends in presence and abundance of this species in mature riparian will be used to help indicate effectiveness of management at maintaining these communities.
Field sparrow, Northern cardinal, Chipping sparrow, Summer tanager	Trends in presence and abundance of these species in areas restored to woodlands, and wooded grasslands/shrublands would be used to help indicate effectiveness of management at establishing desired conditions in these restoration areas.
Northern bobwhite quail	Trends in this species will be used to help indicate the effectiveness of management at restoring, and maintaining a habitat mosaic of yellow pine and yellow pine-hardwood woodland and wooded grassland and grassland.

3. Is habitat diversity being provided?

Forest Goals, Objectives, and Standards have been established for maintaining a balance between age classes in major forest communities. Some wildlife species depend on young forest or early successional habitat conditions, while others depend on older forest. Trends in the relative abundance of age classes and abundance of habitat conditions, such as early-successional habitat, mature forest interiors, old-growth, and permanent grassy openings, will be monitored. Population trends of Management Indicator Species selected to help indicate effects of management on these habitats will be monitored.

Management Indicator Species	Reasons for Selection
Prairie warbler	Trends in presence and abundance of this species in young (0-10 years old) yellow pine or mixed yellow-pine-oak forests will be used to help indicate the effectiveness of management in achieving desired conditions within these habitats.
Yellow-breasted chat or eastern Towhee	Trends in presence and abundance of this species in young (0-10 years old) forests will be used to help indicate the effectiveness of management in achieving desired conditions within these habitats.
Cerulean warbler	Changes in presence of this species in areas that provide mature, moderate density (70-90 sq ft/ac) upland oak dominated forest habitats will be used to indicate effectiveness of management in achieving desired conditions within these sites.
Field sparrow	Trends in presence and abundance of this species in grassy openings will be used to help indicate the effectiveness of management in achieving desired conditions within these habitats.
Ovenbird	Trends in presence and abundance of this species in mature deciduous or mixed forests will be used to help indicate the effectiveness of management in maintaining desired condition relative to forest interior habitats.

4. How well are terrestrial habitat attributes being provided?

Special habitat attributes such as hard and soft mast, den trees, snags, and downed wood are necessary elements for certain species. A variety of Forest Plan Goals, Objectives, and Standards provide for the protection, restoration, and maintenance of these elements. Trends in the abundance and condition of terrestrial habitat attributes will be monitored.

5. What is the status and trend in aquatic habitat conditions in relationship to aquatic communities?

The Forest Plan provides for protection and restoration of riparian ecosystems, wetlands, and aquatic systems and for assuring that aquatic habitat conditions are suitable to maintain native aquatic communities. Indices based on macroinvertebrate assemblages, that reflect the community structure and function, combined with physical and chemical parameters of the aquatic system will be monitored. These indices are not individual, or groups of species, and therefore will not be referred to as Management Indicator Species.

Macroinvertebrate indices	Reasons for Selection
Indices based on aquatic macroinvertebrate assemblages.	Macroinvertebrates are widely distributed throughout the DBNF. They can be found in nearly every stream and body of water on the Forest. The indices, which are a numerical representation of the community structure and function, accurately reflect the health of the aquatic habitat being evaluated. These indices can be reliably compared between streams with similar size.

6. What are status and trends of forest health threats on the Forest?

Measures designed to control or mitigate negative effects of insects, disease, non-native invasive species, air pollution, and high fuel loading is important aspects of this Forest Plan. Trends in occurrence and effects of air pollutants, wildland fire, insects and diseases, and non-native invasive species will be monitored.

7. What are the status and trends of federally listed species and species with viability concerns on the forest?

Contribution to conservation and recovery of federally listed Threatened and Endangered species is an important Goal of this Forest Plan. Trends in occurrence or abundance of these species will be monitored along with levels of management activities implemented for the purpose of achieving recovery.

Maintaining habitat capable of supporting viable populations of native and desired non-native species is also an important Goal of the Forest Plan. Many Objectives and Standards are designed to meet this Goal. Monitoring will focus on trends for populations and/or habitats of species of viability concern. Where feasible, species monitoring will often be accomplished by monitoring communities of species (e.g., fish, bats, birds).

Management Indicator Species	Reasons for Selection
Pitch pine	Trends in populations of this species will be used to indicate effectiveness of management activities designed specifically to maintain viability of this species.

8. What are the trends for demand species and non-timber forest products and their use?

The DBNF provides large public ownership with opportunities for hunting, fishing, wildlife viewing, and collection of non-timber forest products. Monitoring of some demand species populations and/or harvest levels will be done in coordination with the Kentucky Dept. of Fish and Wildlife Resources (KDFWR) or the Kentucky State Nature Preserves Commission. One of these species is selected as a Management Indicator Species where effects of National Forest management are important to meeting public demand, and monitoring assistance from KDFWR is available. Some species that are collected as non-timber forest products will be monitored through management of the permitting process.

Management Indicator Species	Reasons for Selection
White-tail deer	Trends in harvest levels and hunting demand will be used to help indicate effectiveness of management in meeting public demand for this species.

9. Are high quality, nature-based recreation experiences being provided and what are the trends?

The DBNF offers a unique combination of nature-based dispersed recreation, including undeveloped settings, built environments that re-enforce natural character, and wildland settings that complement enjoyment of special places. This Plan aims to provide for safe, natural, well-designed, accessible, and well-maintained recreational opportunities for all visitors. Monitoring visitor experiences and the condition of facilities will help gage the effectiveness in meeting this commitment.

10. What are the status and trends of recreation use impacts on the environment?

This Forest Plan is committed to providing recreational opportunities that are compatible with stewardship of Forest resources. Impacts of motorized uses, site occupancy, and large volumes of users on riparian, stream, and aquatic resources, vegetation, and soils will be monitored.

11. What is the status and trend of Wilderness character?

Wilderness character is comprised of both human and biophysical elements. Monitoring the human elements requires monitoring trends in the human experiences, i.e., solitude, crowding, etc., as well as trends in the use patterns and visitor impacts. User monitoring and surveys will allow for tracking trends among visitors to Wilderness, while trailhead use and identification of sites with impacts will allow us to track movement and activities within Wilderness and relationships to biophysical effects. Monitoring biophysical elements is important for tracking changes to the natural systems due to natural and human influences within and outside the Wilderness. Although there are many components to the biophysical element, air quality is viewed as a basic indicator of Wilderness health.

12. What are the status and trend of Wild and Scenic River conditions?

The two main elements in determining the eligibility and suitability of a river for inclusion in the National Wild and Scenic Rivers System are a free-flowing condition and the presence of Outstandingly Remarkable Values. Rivers determined to be eligible, or eligible and suitable, which have not yet been designated by Congress must have those elements protected until a further designation is assigned. Monitoring changes to these elements will help us evaluate our management of these rivers on our forests.

13. Are the scenery and recreation settings changing and why?

Scenery and recreational settings are managed by establishing Scenic Integrity Objectives (SIO) and Recreation Opportunity Spectrum (ROS) management direction. Management of scenery and settings are essential in the management of recreational experiences and the quality of the environment. Changes in scenic quality of the forest and recreation settings will be monitored.

14. Are heritage sites being protected?

Compliance with the National Historic Preservation Act is essential during Forest Plan implementation. Before an undertaking occurs, sites eligible for placement on the National Register of Historic Places must be identified and protected. Monitoring will be done to assess how well sites are being identified for protection and whether site protection measures is effective in preventing site loss.

15. Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality, quantity, and timing of water necessary to protect ecological functions and support intended beneficial uses?

This Forest Plan provides for management of watersheds to provide resilient and stable conditions to support the quality, quantity, and timing of water necessary to protect ecological functions and support intended beneficial water uses. Numerous best management practices are established as Standards for practices to be carried out during implementation of the Forest Plan. Watershed condition, improvement needs, water quality, and implementation of best management practices will be monitored. The Forest Service will share results of water quality monitoring results with the Kentucky Division of Water for use in broader water quality assessments and TMDLs.

16. What are the conditions and trends of riparian area, wetland and flood plain functions and values?

Riparian ecosystems restoration and management is important to maintain aquatic resources and values. Desired conditions, including the composition and structure of vegetation, equipment limitations, maintaining ground cover and stable stream banks are established in the Forest Plan. Flood plains and wetlands are to be protected. Riparian management practices and Standards, ground cover, stream bank stability, and wetland and flood plain status will be monitored.

17. How do actual outputs and services compare with projected? [36 CFR 219.12(k)1]

The 1982 NFMA implementing regulations require that outputs and services will be monitored and compared to those projected in the Forest Plan. Trends in forest product, mineral leasing and surface rights, access and road conditions, and Forest Plan implementation costs will be tracked and compared to projections made at the time the Forest Plan was developed.

18. Are silvicultural requirements of the Forest Plan being met?

The 1982 NFMA implementing regulations also require monitoring of specific silvicultural requirements. Silvicultural practices, harvest methods, harvest unit size, regeneration establishment, and land suitability for timber productions will be monitored and evaluated to determine if and when changes may be needed.

19. Are Forest Plan Objectives and Standards being applied and accomplishing their purpose?

Periodic review of Objectives and Standards established in the Forest Plan is called for to assure that desired condition are being achieved and that these requirements will stay current given Forest Plan modifications, changed conditions and new information that accumulate over time. Implementation and effectiveness of best management practices and other Standards will be tracked and periodically evaluated.

RESEARCH NEEDS

Research and monitoring are related activities that help to meet information needs for adaptive management of National Forests. Research involves rigorous study under controlled conditions, following the scientific method. Research activities include study planning, design, quality control, peer review, and relatively rigid publication standards. Monitoring, in contrast with research, is generally conducted under less controlled conditions and results are often more general. Research needs for management of the National Forests are to be identified during planning and periodically reviewed during monitoring and evaluation of implemented Forest Plans (36 CFR 219.28).

Research needs identified during development of this Forest Plan are listed in Appendix E. Research needs identified while monitoring the implementation of the Forest Plan will be reported in Annual Monitoring and Evaluation Reports.

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Appendix A

GLOSSARY, ACRONYMS, AND SCIENTIFIC NAMES

Glossary

A

abiotic - Refers to a non-living component of an ecosystem. For example, the climate is an abiotic component of ecosystems. Contrast with biotic.

accessibility - 1. The relative ease or difficulty of getting from, or to, a location. 2. The ability of a site, facility or activity to be enjoyed by persons of varying physical and mental abilities.

adaptive management - A type of natural resource management that implies making decisions as part of an on-going process. Monitoring the results of actions will provide a flow of information that may indicate the need to change a course of action. Scientific findings and the needs of society may also indicate the need to adapt resource management to new information.

advanced regeneration - Seedlings or saplings that develop or are present in the understory, normally considered when planning regeneration treatments.

affected environment - In the NEPA process, the area that will be affected or created by the alternatives under consideration.

afforestation - The establishment of a forest or stand in an area where the preceding vegetation or land use was not forest. See deforestation, reforestation.

age class - 1. A grouping of stands according to an interval of years, usually 10 years. 2. A distinct aggregation of trees within a stand, originating from a single natural event or regeneration activity (cohort). See cohort.

airshed - A geographic area that shares the same air.

all terrain vehicle (ATV) - A motorized recreational vehicle, such as a 3 and 4 wheeler, less than 50 inches in width and with more than two wheels.

allowable sale quantity (ASQ) - The amount of timber that may be sold from the area of suitable timberland covered by the forest plan for a time period specified by the plan. The ASQ is based on a 10-year period for DBNF, although it may be expressed on an "average annual ASQ" basis.

all-terrain vehicle (ATV) - A motorized recreational vehicle, such as a 3-wheeler or and 4-wheeler, less than 50 inches in width and with more than two wheels.

alluvial - Pertaining to material or processes associated with transportation and deposition by concentrated running water.

alluvium - Sediment deposited by water, including gravel, sand, silt, and clay, in various mixtures.

Analysis of the Management Situation (AMS) - The fourth step in the NFMA planning process. The AMS is a determination of the ability of the planning area to supply goods and services in response to the demands of society. This determination provides the basis for decisions to change management emphasis, and guides the direction and extent of those changes.

anthropogenic - Actions or conditions that are of human origin.

aquatic- and riparian-associated species - Species that may use a variety of habitats, but that disproportionately make use of aquatic or riparian areas during at least one stage of their life cycle.

aquatic ecosystem - Refers to the interaction between the following biotic and abiotic components: the stream channel, lake and estuary beds, water, biotic community, and associated habitat features. Included are perennial, intermittent and scoured ephemeral streams and lakes with intermittently, semi-permanently and seasonally flooded channels. In the absence of flowing water, intermittent and scoured ephemeral streams may have pools, or surface water may be absent altogether.

aquifer - A body of rock that is saturated with water or transmits water. When people drill wells, they tap water contained within an aquifer.

Archaeological District - A grouping of archaeological sites that are linked by function, theme or physical development or aesthetically by plan which are listed or eligible for listing on the National Register of Historic Places.

artificial regeneration – 1. A group or stand of young trees created by direct seeding or by planting of seedlings or cuttings, 2. The process for establishment of such regeneration. See regeneration.

aspect - The direction a slope faces. For example, a hillside facing east has an eastern aspect.

B

barrier - 1. Any feature or condition that restricts movement of organisms or prevents establishment of organisms that have migrated there. 2. A natural or artificial obstruction used to stop or check a fire or to provide a control line from which to work. See firebreak.

basal area (BA) - 1. The cross-sectional area of a single stem, including the bark, measured at breast height (4.5 feet above the ground; see diameter at breast height). 2. The cross-sectional area (at breast height) of a group of stems within an area (such as a stand), usually expressed in square feet per acre. See stand.

bat colony site - A maternity site, bachelor colony, or a winter hibernation site for one or more species of bats.

bench - Normally a long, narrow, relatively level ledge or gently inclined strip of land bounded by steep slopes above and below, and formed by differential erosion of rocks and soils that are bedrock controlled.

best management practice (BMP) - One or more practices designed to prevent or reduce pollution or another negative effect on a resource.

big game species - Large mammals, such as deer, that are hunted for sport.

biological assessment (BA) - Information prepared by, or under the direction of, a federal agency to determine whether a proposed action is likely to: 1) adversely affect listed species or designated critical habitat; 2) jeopardize the continued existence of species that are proposed for listing; or 3) adversely modify proposed critical habitat.

biological control - The use of natural means, or agents, to control unwanted pests. Examples include introduced or naturally occurring insects, bacteria, or fungi that act as predators, parasites, or disease agents of pests. Biological controls can sometimes be alternatives to mechanical or chemical means.

biological diversity - The variety of life in an area, including the variety of genes, species, plant and animal communities and ecosystems, and the interaction of these elements. See habitat diversity. The term is often abbreviated to biodiversity.

biological evaluation (BE) - A documented USDA Forest Service review of internal programs or activities in sufficient detail to determine how an action or proposed action may affect any threatened, endangered proposed or sensitive species.

biological opinion (BO) - A document that includes: 1) the opinion of the US Fish and Wildlife Service or the National Marine Fisheries Service as to whether or not a federal action is likely to jeopardize the continued existence of listed species, or result in the destruction or adverse modification of designated critical habitat; 2) a summary of the information on which the opinion is based; and 3) a detailed discussion of the effects of the action on listed species or designated critical habitat.

biomass - The total mass (weight) of all living organisms in a biological community, usually expressed as mass per unit area.

biome - The complex of living communities maintained by the climate of a region and characterized by a distinctive type of vegetation. Examples of biomes in North America include the eastern deciduous forest, tundra, desert, prairie, and the western coniferous forests.

biota - The plant, animal and other life forms of a particular region, inclusive.

biotic - Refers to live components of an ecosystem. For example, green plants and soil microorganisms are biotic components of ecosystems. Contrast with abiotic.

board foot - A measurement term for lumber or timber. It is the amount of wood contained in an unfinished board 1 inch thick, 12 inches long, and 12 inches wide. The conversion factor used in the preparation of this document is: 6.0 board feet per cubic foot.

browse - Twigs, leaves, and young shoots of trees and shrubs eaten by animals. Browse is often used to refer to the shrubs eaten by big game species, such as white-tailed deer.

buffer - An area of land between two separate and distinct land use regimes, which can serve to modify the effects of one land use on the other.

bulk density - Weight per unit volume of soil as it occurs under field conditions, including pore space or voids in the soil.

burn prescription - See prescribed fire plan.

C

cable logging - Logging that involves the transport of logs from the stump area to a landing using an overhead system of winch-driven cables to which logs are attached with chokers. Also referred to as cable yarding. See landing.

cable set – In cable logging, refers to the entire configuration of the yarder, spars, tail trees, cables, guy lines, and associated hardware.

candidate species - Plant and animal taxa considered for possible addition to the List of Endangered and Threatened Species. These are taxa for which the Fish and Wildlife Service has on file sufficient information on biological vulnerability and threat(s) to support issuance of a proposal to list, but issuance of a proposed rule is currently precluded by higher priority listing actions.

canebrake - A dense thicket or growth of cane (*Arundinaria gigantea*).

canopy - The part of any stand of trees represented by the tree crowns. It usually refers to the uppermost layer of foliage, but it can be used to describe lower layers in a multi-storied forest.

carbonaceous - Rock or sediment that is rich in organic matter.

cave - Any naturally occurring void, cavity, recess, or system of interconnected passages that is beneath the surface of the earth or within a cliff or ledge, and which is large enough to permit a person to enter whether the entrance is excavated or naturally formed. It also refers to any natural pit, sinkhole, or other opening which is an extension of a cave entrance or which is an integral part of the cave.

cavity - A hole in a tree, often used by wildlife species for nesting or roosting.

channery - A thin, flat rock fragment of limestone or sandstone, up to 6 inches in diameter.

chemical control - The use of pesticides to control pests or undesirable species. Contrast with biological control and mechanical control.

chemical site preparation - The killing or retardation of competing vegetation to prepare an area for reforestation, using herbicide.

chipping - An activity using a mobile machine (chipper) within which slash is ground up and then blown into a truck or pile. Chipping may occur during arboriculture e.g. in recreation areas, visually sensitive areas, or in logging operations where chips are produced for use. See shredding.

chopping - A mechanical site preparation method in which a steel drum, often partially filled with water and equipped with cutting blades, is pulled by a crawler tractor or skidder across a site to break up slash or crush vegetation.

clearcut - A regeneration method in which all or almost all of the trees are removed in one cutting.

cliffline - As defined in this document, a naturally occurring, exposed vertical rock structure that is 10 feet or more in height and a minimum of 100 feet in length, of sandstone or limestone parent material. A cliffline may have boulders accumulated at its base. The cliffline usually contains fissures and openings of various sizes that have been created from rock sloughing, erosion, or geological forces. Cliffline-associated species of plants and animals, including invertebrates such as crickets and spiders, are generally characteristic of this habitat. The cliffline is considered to be

continuous if segments are separated by no more that 300 feet. These structures are included within the Cliffline Community Prescription Area.

climatic - Refers to formation or effects in the environment resulting from or influenced by climate. Contrast with edaphic.

climate - The characteristic weather of a region, particularly temperature and precipitation, averaged over some significant interval of time.

climax - The culminating stage in plant succession for a given site. Climax vegetation is stable, self-maintaining, and self-reproducing.

coal bed methane - A gas that is formed when peat deposits are converted into coal by heat and chemical processes over geologic time.

coarse filter management - The level of land management that addresses the needs of all associated species, communities, environments, and ecological processes in a land area. Contrast with fine filter management.

course woody debris – Defined in this document as pieces of wood (branches, whole trees, root wads, etc.) that are at least 4 inches in diameter and 3 feet in length, within a stream channel. Course woody debris contributes to habitat complexity by forming pools, encouraging scour from stream banks, partitioning the water column and providing cover for aquatic species. Course woody debris serves as a refuge for fish and the hard substrates and associated invertebrate production is an important food source. Course woody debris also influences flow velocity, channel shape and sediment storage and routing. Also referred to as large woody debris.

cohort - In forestry, a group of trees developing after a single disturbance, commonly consisting of trees of similar age. An uneven-age stand contains three or more cohorts. See age class.

collector roads - Roads that serve small land areas and are usually connected to a forest development road, a county road, or a state highway.

colluvial - Pertaining to material or processes associated with transportation and/or deposition by mass movement (gravitational action) and local, unconcentrated runoff on side slopes and/or at the base of slopes.

colluvium - Unconsolidated, unsorted earth material being transported or deposited on side slopes and/or at the base of slopes by mass movement (e.g. direct gravitational action) and by local, unconcentrated runoff.

common variety minerals - Common varieties of sand, gravel, stone, pumice, pumicite, cinders, clay, and other similar materials. Such mineral materials include deposits that have economic value, and are used for agriculture, building, abrasion, construction, landscaping, and similar uses.

communications site - An area of National Forest System land designated through the land and resource management planning process. A communications site may be limited to a single communications facility, but most often encompasses more than one. Each site is identified by name, usually a local prominent landmark, such as Bald Mountain Communications Site.

community - In ecology, the collection of species that characteristically occur together under a specified set of conditions. Often, the term is used to refer only to vegetation.

composition - In ecology, the biotic and abiotic components of an ecosystem.. Composition could include water, minerals, trees, snags, wildlife, soil, microorganisms, and plant species.

concern level - In scenery management, the measure of the degree of public importance placed on landscapes as viewed from travelways and use areas. Concern levels are ranked as high, moderate, and low.

concession - The granting of the operation and maintenance of a recreation facility to a private business through a special use authorization.

concessionaire - The permitted, private operator of a USDA Forest Service recreation facility.

conifer - A tree that produces cones, such as a pine, spruce, or fir tree. Also known as softwood.

connectivity - 1.The arrangement of habitats that allows organisms and ecological processes to move across the landscape. 2.Patches of similar habitats are either close together or linked by corridors of appropriate vegetation. The opposite of fragmentation.

conservation species - A term used by USDA Forest Service to describe species for which representation on a particular forest is a concern. Also known as locally rare species on some forests.

consumptive use - Use of a resource that reduces its supply, such as logging, mining and water use. Contrast with non-consumptive use.

Continuous Inventory of Stand Conditions (CISC) - A computerized database used by Region 8 of the USDA Forest Service to store and retrieve timber stand attributes, scheduled activities, and accomplished activities.

contour - A line drawn on a topographic map connecting points of the same elevation.

controlled surface use stipulation - A minerals leasing stipulation that refers to the special operational constraints that may modify a lessee's rights when resource values have been identified. Allowed use and occupancy (unless restricted by another stipulation) with identified resource values requiring special operational constraints that may modify the lease rights.

corridor - A feature of the landscape that connects similar areas.

Council on Environmental Quality (CEQ) - An advisory council to the President, established by the National Environmental Policy Act of 1969. The CEQ reviews federal programs for their effect on the environment, conducts environmental studies, and advises the President on environmental matters.

cove - A smooth, rounded, open, oval-shaped head of a small valley or drainage. Typically used to describe such a feature, which is in a moist shaded and protected site.

cover-forage ratio - In wildlife management, the ratio of hiding cover to foraging area.

cover - 1) Any feature that conceals wildlife or fish. Cover may be dead or live vegetation, boulders, or undercut streambanks. Animals use cover to escape from predators, rest or feed. 2) The kind of and nature of vegetation which casts a shadow on the ground. Can describe any or all vertical layers of vegetation.

created opening - An opening in the forest canopy created by the application of even-aged regeneration practices.

critical habitat - Areas formally designated for the survival and recovery of federally listed threatened or endangered species.

crown - The part of a tree or woody plant bearing live branches and foliage.

crown height - The distance from the ground to the base of the crown of a tree.

cultural resource - The remains of sites, structures, or objects used by people in the past; they can be identified as historical or pre-historic.

cumulative effect - see cumulative impact.

cumulative effects [ESA Section 7] - Are those effects of future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation.

cumulative impact - Impact on the environment that results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

currently suitable roost tree - In Indiana bat management, an immediate roost treeor a live shagbark, shellbark, or red hickory that is equal to or greater than 6" DBH. See immediate roost tree. Contrast with potential roost tree.

cutting cycle - The planned interval between regeneration cuts occurring within two-aged or uneven-aged stands. See rotation.

D

deadfall - Downed tree in various stages of decomposition.

debris flow - A moving mass of rock, soil and mud; it is usually slow moving.

decision criteria - The rules and standards used to evaluate alternatives to a proposed action on National Forest System land. Decision criteria are designed to help a decision-maker identify a preferred choice from the array of alternatives.

deforestation - The clearing of a forest, or portion of a forest, to convert it to non-forest use, such as a farm, subdivision, or power-line clearing. See afforestation, reforestation.

demand species - Animal species commonly associated with recreation (e.g. hunting, fishing, viewing).

designated old-growth - See old-growth.

desired future condition - Land or resource conditions that are expected to result if goals and objectives are fully achieved.

desired future condition description (DFCD) - An integrated visualization of what the forest, management area, or prescription area should look like in the future. The description includes a

narrative and may also include pictures or other graphic depictions to help communicate the intended condition. The DFCD integrates relevant goals, making it apparent that they are not mutually exclusive and, can all be accomplished.

developed recreation - Recreation that takes place at defined areas where constructed facilities are provided for such use. Developed recreation sites include campgrounds, picnic areas, boat ramps and interpretive sites. Contrast with dispersed recreation.

diameter at breast height (DBH) - The diameter of a tree 4.5 feet above the ground on the uphill side of the tree.

disking - An activity using a plow drawn by a tractor or skidder having one or more sets of heavy, round, concave, sharpened, freely rotating steel disks angled to cut and turn a furrow in the ground. Disking may be used in mechanical site preparation or in watershed improvement projects.

dispersed recreation - Recreation that takes place in primitive settings where few, if any, constructed facilities are provided. Trail use, rock climbing, boating, hunting and fishing are examples of dispersed recreation. Contrast with developed recreation.

disturbance - Any relatively discrete event in time that disrupts ecosystem, community, or population structure; and changes resources, substrate availability, or the physical environment.

down-cutting - The eroding of a stream downward in its channel, resulting in the lowering of the streambed relative to the top of the bank.

Draft Environmental Impact Statement (DEIS) - The draft version of an Environmental Impact Statement that is released to the public and other agencies for review and comment.

drumming logs - Drumming logs are large, decaying logs generally located near the top of a knoll, and used by male ruffed grouse for display purposes. They usually have large overhanging shrub cover. Occasionally rocks or the butts of newly felled treetops will be used instead of logs. Many of the same drumming locations are used year after year, often by the same male. Drumming centers have a zone of influence of about 20 acres that are usually defended.

duff - The fermentation and humus layer of the forest floor material lying below the litter and above mineral soil; it consists of partially decomposed organic matter whose origins can still be visually determined as well as the fully decomposed humus layer. This layer does not include the freshly cast material in the litter layer. Contrast with litter.

E

eastern river front forest (ER forest) - A riparian forest that is found on, or within several feet of the bank of a stream or river. This community is characterized by tree species tolerant of short duration flooding, but requiring generally well-drained soils.

ecological approach - An approach to natural resource management that considers the relationships among all organisms, including humans, and their environment. Also referred to as ecosystem management.

ecological management unit (EMU) - A grouping of one or more soil series that have similar characteristics such as texture, structure, or water retention capacity. EMUs are used in soil mapping.

ecology - 1. The interrelationships and interconnectedness of living things to one another and to their environment. 2. The study of these interrelationships and interconnections.

ecoregion - An area over which the climate is sufficiently uniform to permit development of similar ecosystems on sites that have similar properties. Ecoregions contain many landscapes with different spatial patterns of ecosystems.

ecosystem management - An ecological approach to natural resource management to assure productive, healthy ecosystems by blending social, economic, physical, and biological needs and values. See ecological approach.

ecosystem - An arrangement of biotic and abiotic components and the forces that move among them.

ecotone - The transition zone between two or more biotic communities in which there is a gradation from community to another. See edge.

edaphic - Refers to formation or effects in the environment resulting from or influenced by local conditions of the soil or substrate. Edaphic is a term used in the past to refer to any soil characteristics that effect plant growth, e.g., acidity or alkalinity. See climatic

edge - The junction between two dissimilar habitat types or successional stages. See ecotone.

edge effect - Are ecological characteristics associated with this junction that positively or negatively affect species living there

element - In ecosystem management, an identifiable component, process, or condition.

endangered species - A plant or animal species that is in danger of extinction throughout all or a significant portion of its range. Endangered species are identified by the Secretary of the Interior/Secretary of Commerce in accordance with the Endangered Species Act of 1973.

endemic species - A species that occurs naturally in a certain region and whose distribution is relatively limited geographically.

environmental analysis - 1. An analysis of actions and their predictable long and short-term environmental effects. Environmental analyses include consideration of physical, biological, social, and economic factors. 2. A general term that could refer to an environmental assessment or an environmental impact statement.

environmental assessment (EA) - A briefer version of an environmental impact statement, prepared when it is uncertain whether the environmental effects associated with a proposal are significant. See environmental impact statement.

environmental impact statement (EIS) - A disclosure statement revealing the environmental impacts of a proposed action, which is required for major federal actions under Section 102(2)(C) of the National Environmental Policy Act. A draft EIS is released to the public and other agencies for review and comment. The statement provides full and fair discussion of significant environmental impacts and informs the decision maker and the public of the reasonable alternatives, which would avoid or minimize adverse impacts or enhance the quality of the human environment.

ephemeral stream - A watercourse that may or may not have a well-defined channel, and which flows only for short periods (less than 10 percent of an average year) during and following precipitation. Ephemeral stream bottoms are usually above the water table and do not contain fish or aquatic insects with larvae that have multi-year life cycles. Contrast with intermittent stream and perennial stream.

eradication – In silviculture, elimination of gypsy moth from an area infested as a result of artificial movement of gypsy moth life stages from the generally infested area.

erosion - The wearing away of the earth's surface by running water, wave action, moving ice and wind, or processes of mass wasting chemical processes. Geologic erosion refers to natural erosion processes occurring over long (geologic) time spans. Accelerated erosion generically refers to erosion in excess of what is presumed or estimated to be naturally occurring levels, and which is a direct result of human activities.

escape cover - Vegetation of sufficient size and density to hide an animal, or an area used by animals to escape from predators.

E**uropean settlement -** In an ecological context, the era of European settlement in the area of the Daniel Boone National Forest is regarded as beginning around 1700 A.D. The era of pre-European settlement is generally defined as 1000 to 1700.

evapotranspiration - A combined term for water vapor lost from soil or an open water surface (evaporation) and from plants, mainly via the stomata (transpiration). The combined term is used since in practice it is very difficult to determine levels of water vapor resulting from evaporation versus transpiration.

even-aged management - See even-aged silvicultural system.

even-aged silvicultural system - A planned sequence of treatments designed to maintain and regenerate a stand with one age class. Also referred to as even-aged management.

existing landscape character - A term used in scenery management to refer to a word picture that includes cultural values, positive attributes, and sense of place. It can serve as a baseline for developing alternatives in land and resource plan revision and to develop Landscape Character Themes. See landscape character theme.

existing scenic integrity - A term used in scenery management to refer to the wholeness or intactness of the landscape. It is the base line used to judge deviations from desirable positive landscape character. It is expressed in terms of Very High, High, Moderate, Low, Very Low, and Unacceptably Low.

extirpate – In ecology, to make a species extinct across an area.

F

Facility Development Level - In recreation management, the degree to which a recreation facility is designed and constructed to provide facilities and amenities for the public.

Factor of safety equation (Fs) - An equation used to rate slope stability against landsliding. A slope's stability is a function of soil qualities and properties as well as the properties of the underlying bedrock, as influenced by groundwater and vegetation. The Fs is a simplified ratio of the properties of soils and bedrock and the geometry of a slope, representing the ratio of opposing forces, those forces resisting failure (friction and cohesion) and the driving forces (loading).

falling - See felling.

fauna - The collective animal life of an area.

federally listed species (PET species) - See listed species.

felling - The cutting down of a tree. Also referred to as falling.

final cut - In a stand being managed under the seed tree or shelterwood regeneration method, the removal of the last seed bearers or shelter trees after regeneration of new trees has been established.

fine filter management - The level of land management that focuses on the welfare of a single species or only a few species rather than the broader habitat or ecosystem. Contrast with coarse filter management.

fire exclusion - The policy and practice of eliminating fire from an area to the greatest extent possible, through the suppression of wildland fires and a lack of fire use. See fire suppression.

fire intolerant species - A species with morphological characteristics that give it a higher probability of being injured or killed by fire than a fire-tolerant species, which has a "relatively low" probability of being injured or killed by fire.

Fire Regime Current Condition Classes - A qualitative measure describing the degree of departure from historical fire regimes, possibly resulting in alterations of key ecosystem components such as species composition, structural stage, stand age, canopy closure and fuel loadings. The three classes are defined as:

> **Condition Class 1** - Fire regimes are within a historical range, and the risk of losing key ecosystem components is low. Species composition and structure are intact and functioning.
>
> **Condition Class 2** - Fire regimes have been moderately altered from the historical range. The risk of losing key ecosystem components is moderate. Fire frequencies have departed from historical frequencies by one or more return intervals. This results in moderate changes to one or more of the following - fire size, intensity and severity, and landscape patterns. Vegetation attributes have been moderately altered from their historical range.
>
> **Condition Class 3** - Fire regimes have been significantly altered from their historical range. The risk of losing key ecosystem components is high. Fire frequencies have departed from historical frequencies by multiple return intervals. This results in dramatic changes to one or more of the following: fire size, intensity and severity, and landscape patterns. Vegetation attributes have been significantly altered from their historical range.

fire regime - Patterns of fire occurrence, size, severity and effects in a given area or ecosystem.

fire suppression - All the work of extinguishing or confining a fire beginning with its discovery and continuing until the fire is completely extinguished. See fire exclusion.

fire use - A broad term encompassing the combination of wildland fire use fires and prescribed fires to meet resource objectives.

firebreak - A natural or constructed barrier used to stop or check fires that may occur, or to provide a control line from which to work. See fireline.

fire-influenced community - A fire-adapted community in which fire occurs, but at low intensity and or frequency. When fire affects the vegetation, the effects are generally expected to be small, and not an important contributor to community composition and structure. Contrast with fire-mediated community.

fireline - The part of the fire control line along which mineral soil has been exposed. See firebreak.

fire-mediated community - A fire-adapted community in which fire occurs at greater frequency and possibly greater intensity than in other locations, and in which fire is expected to drive community composition and structure. Contrast with fire-influenced community.

fire-tolerant species - A plant species with morphological characteristics that give it a lower probability of being injured or killed by fire than a fire-intolerant species, which has a relatively high probability of being injured or killed by fire.

fisheries habitat - Streams, lakes, and reservoirs that support fish, or have the potential to support fish.

fixed anchor – Any device on a cliff face for all climbers to use for purpose of assisting in rock climbing or rappelling activities. Such devices include bolts placed in drilled holes, removable cams and nuts, pitons and straps/slings.

floodplain - 1. The nearly level plain that borders a stream and is subject to inundation under flood-stage conditions unless protected artificially. It is usually a constructional landform built of sediment deposited during overflow and lateral migration of streams. 2. At a minimum, an area subject to a one percent or greater chance of flooding in any given year.

flora - The collective plant life of an area.

forage - The inclusive collection of browse and non-woody plants that are eaten by wildlife species or livestock.

forb - A broadleaf plant with little or no woody material in the stem.

foreground - In scenery management, the detailed landscape generally found within one-half mile of the observer.

forest - In ecology, a mostly closed high canopy contiguous area of trees with a moderate to high basal area (60-120 or more square feet/ acre). In forestry, land at least 10 percent stocked by forest trees of any size, including land that formerly had such tree cover and that will be reforested. The minimum area for classification of forest is one acre, and at least 120 feet wide. Also referred to as forestland, forest land or forested land. When capitalized in this document, the word Forest refers to the Daniel Boone National Forest.

forest development road (FDR) - Road under the jurisdiction of the USDA Forest Service.

forest health - 1. The perceived condition of a forest derived from concerns about such factors as its age, structure, composition, function, vigor, presence of unusual levels of insects or disease, and resilience to disturbance. Note that perception and interpretation of forest health are influenced by individual and cultural viewpoints, land management objectives, spatial and temporal scales, the relative health of the stands that comprise the forest, and the appearance of the forest at a point in time. 2. A condition where biotic and abiotic influences do not threaten resource management objectives now or in the future. Ill health is associated with declines in biological diversity, loss of primary productivity, reversal of successional patterns, widespread and severe disease, and loss of nutrient capital. A healthy forest can be envisioned as one with the capacity for renewal and resilience to a range of disturbances, while meeting the current and future needs of people.

forest land - See forest.

Forest Management Team - A group of people selected by the Forest Supervisor to provide guidance in management decisions within the Forest Supervisor's authority. This team usually includes District Rangers and staff officers.

Forest Supervisor - The official responsible for administering National Forest System lands on one or more national forests. A Forest Supervisor reports to a Regional Forester.

forest type - A category of forest defined by its vegetation, particularly its dominant species, as based on a percentage cover of trees. Also referred to as forest cover type.

forestland – See forest.

fragipan - A dense subsurface layer of soil whose hardness and relatively slow permeability to water are chiefly due to extreme compactness rather than to high clay content or cementation.

fragmentation - As related to forest management, is a process that results in habitat conversion, habitat discontinuity, and eventually the isolation or insularization of the original habitat. The process of fragmentation occurs across a range of landscape patterns. At one extreme, it is represented by small disturbance patches, which disrupt the continuity of a habitat. At the other extreme, widespread habitat conversion causes isolation of the remnant original habitat into patches:

forest fragmentation: The division or isolation of forested land by non-forest land uses.

within-forest habitat fragmentation: The interruption or isolation of forest habitat due to changes in forest composition or communities, and/or changes in age-class conditions or seral stages.

fuel loading - The amount of fuel present expressed quantitatively in terms of weight of fuel per unit area. This may be available (consumable) fuel or total fuel and is usually dry weight. Also referred to as fuel load.

fuel reduction - The manipulation or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance of a fire to control efforts once a fire is ignited. Also referred to as fuels management.

fuels management - Manipulation, including combustion, or removal of fuels to reduce the likelihood of ignition and/or to lessen potential damage and resistance to control.

fuels - In fire management, flammable natural fuels such as leaf litter or logging slash.

fuelwood - Wood used for conversion to some form of energy, for example in homes or in cogeneration plants.

function - A the process within an ecosystem through which the elements interact, such as succession, the food chain, fire, weather, and the hydrologic cycle.

functional old-growth - See old-growth forest.

future old-growth (FOG) - See old-growth forest.

G

game species - Animal species that are hunted, trapped, or fished for sport, financial gain, or food under state or federal laws, codes, and regulations.

generally infested area (gypsy moth) - The area where gypsy moth lives permanently.

geographic information system (GIS) - 1. A database designed to handle geographic data. 2. A set of computer operations that can be used to analyze geographic data. Also referred to as computerized mapping.

geomorphic process - A process that changes the form of the earth, such as volcanic activity, running water, or glacial action.

geomorphology - The science that deals with the relief features of the earth's surface.

goal - In planning, a concise statement that describes a desired future condition to be achieved with no specific date by which it is to be attained. It is normally expressed in broad, general terms. Goal statements form the principal basis from which objectives are developed.

graminoid - Any grass-like herbaceous flowering plant, including grasses, sedges and rushes; usually with long narrow leaves and inconspicuous flowers.

grazing permit - A document authorizing livestock to use NFS lands or other lands under Forest Service control for livestock.

grazing - The consumption of standing forage by livestock or wildlife.

ground water - The supply of fresh water under the earth's surface in an aquifer or in the soil.

group selection - An uneven-aged regeneration method in which trees are removed periodically in small groups. On National Forest System land, the width of the group is about twice the height of the mature trees and the group size is approximately one-quarter acre.

guideline - Statements describing a preferred or advisable course of action that is generally expected to be carried out. Because guidelines are discretionary, deviation from a guideline does not require an amendment to the Forest Plan, but the rationale for such deviation should be documented in the project record. Guidelines will be compiled and published as part of implementing guidance upon completion of the FLMP revision.

gully erosion - Gully erosion occurs where water concentrates and flows as a stream, cutting down into the soil along the line of flow. Gullies form in exposed natural drainage ways, in horse and off-

highway vehicles trails, in log skid roads, vehicle ruts, etc. In contrast to rills, they cannot be obliterated by ordinary tillage equipment. Deep gullies cannot be crossed with common types of vehicles or equipment (e.g. passenger cars, 4-wheel trucks, and farm tractors).

H

habitat - The physical and biological environment for a plant or animal species in which all the essentials for its development, existence, and reproduction are present.

habitat capability - The ability of a land area or plant community to support a given species of wildlife.

habitat diversity index - A measure of improvement in habitat diversity.

habitat diversity - The diversity of wildlife habitat types within a given area. See biological diversity.

head-cutting - The eroding of a stream uphill in its channel, resulting in the lowering of upstream portions of the streambed relative to the top of the bank.

heritage resources - The remains of sites, structures, or objects used by people in the past; this can be historical or pre-historic.

hibernaculum - Defined in this document as a cave or rockshelter in which bats hibernate during the winter.

hiding area/cover - Vegetation capable of hiding 90% of a deer from human's view at a distance of 200 feet or less.

historic range of variability - The natural fluctuation of components of healthy ecosystems over time. The range of conditions and processes which are likely to have occurred prior to settlement by people of European descent (defined as 1000 to 1700 AD).

horizontal diversity - The distribution and abundance of different plant and animal communities or different stages of plant succession across an area of land. The greater the number of communities in a given area, the higher the degree of horizontal diversity.

hydric soil - Soil that has characteristics indicating development in conditions where soil oxygen is limited by the presence of saturated soil for long periods during the growing season. The Natural Resource Conservation Service lists describe the hydric soils found in the United States.

hydrologeology - The science that deals with subsurface waters and with related geologic aspects of surface waters.

hydrologic balance - The relationship between the quality and quantity of water inflow to, water outflow from, and water storage in a hydrologic unit (e.g., drainage basin, watershed, aquifer, soil profile, lake or reservoir). The term encompasses the dynamic relationships among precipitation, runoff, and changes in ground and surface water storage.

hydrologic cycle - The process of water evaporating, condensing, falling to the ground as precipitation, and returning to the ocean as run-off. Also referred to as the water cycle.

Hydrologic Unit Code (HUC) - See watershed level.

hydrology - The science dealing with the study of water on the surface of the land, in the soil and underlying rocks, and in the atmosphere.

I

immediate roost trees - In Indiana bat management, a live tree of any DBH, having one or more characteristics that make it immediately available for Indiana bat roosting. Characteristics include sloughing bark, or cavities with openings to the outside, e.g., large splits or cracks in the bole, large broken limbs, or lightning scars. See also currently suitable roost tree and potential roost tree.

indicator species - See Management Indicator Species.

indigenous species - See native species.

individual tree selection – See single tree selection.

in-stream flow - Refers to the presence of stream flow adequate to maintain the integrity of the stream channel and protection of downstream beneficial uses such as fish and wildlife habitat needs, recreational uses of water, and livestock watering needs.

insularization - The isolation of a habitat. See fragmentation.

integrated pest management (IPM) - The planned use of a variety of preventive, suppressive, or regulatory tactics and strategies that are ecologically and economically efficient and socially acceptable, to maintain destructive pests at tolerable levels.

Interdisciplinary Team (IDT) - A team of individuals with skills from different disciplines that focuses on the same task or project.

interior forest habitat - High canopy forest conditions suitable to meet the requirements of area-sensitive species that are adversely impacted by forest edge, including microclimate change (warmer, windier), increased predation, increased brood parasitism, and increased competition.

intermediate cutting – An intermediate treatment involving the of trees from a stand sometime between the establishment of the stand and the regeneration cut(s). See intermediate treatments.

intermediate treatment - An inclusive term for any treatment designed to enhance growth, quality, vigor, and composition of the stand between establishment of the stand and the regeneration cut(s). See intermediate cutting. Types of intermediate treatments include thinning, release, and improvement cuttings.

intermittent stream - A stream that normally flows in response to a seasonally fluctuating water table in a well-defined channel (flowing 10-90 percent of an average year). The channel will exhibit signs of annual scour, sediment transport and other stream channel characteristics, absent perennial flows. Intermittent streams typically flow during times of elevated water table levels and may be dry during significant periods of the year, depending on precipitation cycles. Intermittent streams do not maintain fish populations or aquatic insects that have larvae with multi-year life cycles. Contrast with ephemeral stream and perennial stream.

interpretation - The conveyance of information to the public on topics such as natural and heritage resources or general forest information through various methods to better help visitors relate to, experience, understand and enjoy the natural environment and their recreation experience.

interpretive site - A site designated primarily for providing the public interpretive materials and programs.

invasive species - A species that can move into an area and become dominant either numerically or in terms of cover, resource use, or other ecological impacts. An invasive species may be native or non-native.

irretrievable impact - A category of impact in the National Environmental Policy Act to be analyzed in environmental impact statements. Refers to commitments that are lost for a period of time. For example, while an area is used as a developed recreation site, some or all of the timber production there is irretrievably lost. If the recreation area closes, timber production could resume; the loss of timber production during the time that the area was devoted to developed recreation is irretrievable. However, the loss of timber production during that time is not irreversible, because it is possible for timber production to resume if the area is no longer used as a recreation area. Contrast with irreversible impact.

irreversible impact - A category of impact in the National Environmental Policy Act to be analyzed in environmental impact statements. Refers to commitments that cannot be reversed, except perhaps in the extreme long term. For example, once coal has been removed, it will not be replaced within any measurable time period. Contrast with irretrievable impact.

issues - Areas of unresolved conflict concerning management of the National Forest.

K

karst - Topography characterized by sinkholes, caves, and streams that disappear underground. It results from the action of surface and underground water in soluble rock such as limestone.

keystone species - A species whose influence on ecosystem function and diversity are disproportionate to their numerical abundance.

L

Land and Resource Management Plan (LRMP) - The document that guides the management of a particular national forest and establishes management standards for all lands controlled by that national forest. Also referred to as the forest plan or simply the plan.

land use planning - The process of organizing the use of lands and their resources to best meet people's needs over time, according to the lands' capabilities.

landing – A cleared area in the forest to which logs are yarded or skidded for loading onto trucks for transport.

Landscape Character Goal - In scenery management, the visual and cultural image of a geographical area. It uses base information from ecological unit descriptions supplemented with existing land use patterns or themes. It is the adopted desired future appearance of the area and represents trade-off analysis with other resources. Levels include Natural Evolving, Natural Appearing, Pastoral/Agricultural, Historic, Transitional, Suburban, Urban.

Landscape Character Theme - In scenery management, the visual and cultural image of a geographical area. It uses base information from ecological unit descriptions supplemented with existing land use patterns or themes, or Existing Landscape Character. It is the potential desired future appearance of the area and represents trade-off analysis with other resources. Levels include Natural Evolving, Natural Appearing, Pastoral/Agricultural, Historic, Transitional, Suburban, and Urban.

landscape character - Particular attributes, qualities, and traits of a landscape that give it an image and make it identifiable or unique.

landscape visibility - In scenery management and forest planning, the visible landscape as seen from roads, trails and visitor use areas. Visibility mapping is based on terrain only, displaying the areas in distance zones of foreground, middleground, and background. It is mapped during leaf-off conditions from places of varying concern levels. Visibility maps are similar to old system maps that depicted what areas are seldom seen or seen, from where, at what distances and from what sensitivity level travelway or use area and variety class.

landscape - A large land area composed of interacting ecosystems that are repeated due to factors such as geology, soils, climate, and human impacts. Landscapes are often used for coarse grain analysis.

landslide - 1. A general term for a mass movement landform. Types of landslides include creep, rock slides and falls, earthflows, debris flows, and avalanches. 2. A process characterized by downslope movement or transport, by means of gravitational stresses, of a mass of soil, rock and other debris that may or may not be water saturated.

landtype (LT) - A unit of ecological land classification based on similar bedrock geology, soils and landform, which repeats on the landscape. Mapped a local or subregional scale in units of 100-10,000 acres in size.

landtype association (LTA) - A unit of ecological land classification based on similar surficial geology, bedrock geology, soils and landform, which repeat on the landscape. It is mapped on a subregional scale in units of 10,000-100,000 acres in size.

landtype phase (LTP) - A unit of ecological land classification based on similar soils, landform and potential vegetation, that occur repeatedly across the landscape. It is mapped on a local level in units less than 100 acres in size.

large woody debris – see course woody debris.

limits of acceptable change (LAC) - A system in which the amount of change to be allowed is defined explicitly by means of quantitative standards and the appropriate management actions needed to prevent further change are identified, and procedures for monitoring and evaluating management performance are established.

listed species - Refers to one or more species listed by the US Fish and Wildlife Service as endangered (E), threatened (T) or proposed for federal listing as threatened or endangered (P). Also referred to as PET species, or a subset of the species defined as PETS species.

litter - The top layer of the forest floor directly above the duff layer, which includes freshly fallen or only slightly decomposed plant material, including leaves, needles, bark flakes, cone scales, fruits (including acorns and cones), dead matted grass and other vegetative parts that are little altered in structure by decomposition. Contrast with duff.

livestock - Foraging animals of any kind that are kept or raised for use or pleasure.

logging residue -See slash.

logging - The process of felling, skidding, on-site processing, and loading of trees or logs onto trucks. See timber harvesting.

long-term effects - Those effects, which will usually occur beyond the next ten years.

long-term sustained-yield capacity - The highest uniform wood yield from lands being managed for timber production that may be sustained under specified management intensity, consistent with multiple-use objectives.

M

macroclimate - The general, large-scale climate of a large area, as distinguished from the smaller scale microclimate within it. Contrast with microclimate.

management action - Any activity undertaken as part of the administration of the National Forest.

management indicator species (MIS) - 1. A species whose condition can be used to assess the impacts of management actions on a particular area. 2. A species whose population changes are believed to indicate the effects of management activities, and is monitored to track population numbers and habitat conditions, as a way of monitoring biodiversity.

management prescription - Management practices and intensity selected and scheduled for application on a specific area to attain goals and objectives. Also referred to as a prescription.

manual site preparation: The killing or retardation of competing vegetation to prepare an area for reforestation, using hand or power tools such as chainsaws.

mass movement - The down-slope movement of large masses of earth material by the force of gravity. Also referred to as mass wasting or a landslide.

matrix - The least fragmented, most continuous pattern element of a landscape; the vegetation type that is most continuous over a landscape.

mature timber - Trees that have attained full development, especially height, and are in full seed production.

MCFGPD (Thousand Cubic Feet of Gas Per Day) - Used in reference to natural gas production.

mean annual increment - In forestry, a measurement of the average total increase in size or volume of a tree or stand (including the standing crop plus thinnings) up to a given age.

mechanical control - The use of mechanical means to control undesirable vegetation. See mechanical site preparation.

mechanical equipment - In wilderness management, any contrivance for moving people or material in or over land, water or air, having moving parts that provide a mechanical advantage to the user, and that is powered by a living or non-living power source. This includes but is not limited to sailboats, hang gliders, parachutes, bicycles, game carriers, carts and wagons. It does not include wheelchairs when used as necessary medical appliances. It also does not include skis, snowshoes, rafts, canoes, sleds travois or similar primitive devices without moving parts.

mechanical site preparation - The killing or retardation of competing vegetation to prepare an area for reforestation, using heavy equipment. See specific mechanical methods: chopping, disking, scarification, shearing, shredding, raking, and ripping. See site preparation, manual site preparation, chemical site preparation, and mechanical control.

mesic - Refers to moist to moderately moist soil conditions. Under mesic conditions, soil moisture is predictably adequate for plant growth during the growing season.

mesophytic - Of or adapted to a moderately moist environment.

microclimate - The climate of a small site. It may differ from the climate at large of the area due to aspect, tree cover (or the absence of tree cover), or exposure to winds. Contrast with macroclimate.

middleground - The zone between the foreground and the background in a landscape, or the area within ½ mile to 4 miles of the observer.

mineral soil - Soil that consists mainly of inorganic material, such as weathered rock, rather than organic matter.

mineralogy - The science of mineral formation, occurrence, properties, composition, and classification.

minimize - To reduce to the smallest possible amount or degree.

Mississippian Age - A period of the Paleozoic era thought to have covered the span of time between 345 and 320 million years ago.

mitigation - Collective actions taken to avoid, minimize, or rectify the negative impact of a land management practice.

mixed mesophytic forest (MM forest) - A forest containing tree (mostly hardwood) and plant species, which normally grow in moderately moist soils, typically in coves, or in riparian areas.

mixed stand - A stand consisting of two or more overstory tree species, usually a combination of hardwood and softwood species, having at least 30% stocking of each.

monitoring and evaluation - the periodic evaluations of forest management activities to determine how well objectives were met and how management practices should be adjusted.

mortality - 1. The death rate of a species within a given population or community. 2. In forestry, the quantity of formerly merchantable trees that have died within a specified period of time.

mosaic - In this document, areas with a variety of plant communities, generally repeating over a landscape, such as forested and non-forested areas.

motorized equipment - In wilderness management, a machine that uses a motor, engine, or other non-living power source. This includes, but is not limited to, chainsaws, aircraft, snowmobiles, generators, motorboats and motor vehicles. It does not include small battery or gas-powered, hand-carried devices such as shavers, wristwatches, flashlights, cameras or stoves.

multiple-use management - The management of all the various renewable surface resources of National Forest System lands for a variety of purposes such as recreation, range, timber production, habitat, and watershed protection.

N

National Forest System road - A road wholly or partly within, or adjacent to, and serving National Forest System land and necessary for the protection, administration and use of the National Forest System and the use and development of its resources.

National Historic Landmark - Cultural properties designated by the Secretary of the Interior as being nationally significant. These cultural properties may be buildings, historic districts, structures, sites and objects that possess exceptional value in commemorating or illustrating the history of the United States.

National Natural Landmark (NNL) - A nationally significant site designated by the Secretary of the Interior because it represents one of the best remaining examples of particular ecological or geological resources. Within Daniel Boone National Forest, Red River Gorge Geological Area is a National Natural Landmark.

National Register of Historic Places - The official federal list of districts, sites, buildings, structures, and objects significant in American history, architecture, archaeology, engineering, and culture.

native species - Any species native to a given land or water area by natural occurrence.

natural barrier - See barrier.

natural disturbance - See disturbance.

natural range of variability - In planning, the full range of ecosystem processes and disturbance regimes that occur within the current climatic period.

natural resource - A feature of the natural environment that is of value in serving human needs.

NEPA process - Based on the National Environmental Policy Act of 1970, to insure that environmental information is available to public officials and citizens before decisions are made and before actions are taken. The NEPA process is intended to help public officials make decisions that are based on understanding of environmental consequences, and take actions that protect, restore, and enhance the environment.

nest survey - A way to estimate the size of a bird population by counting the number of nests in a given area.

niche - As it relates to recreation marketing; the role best suited for the Forest Service in its provision of recreational facilities, activities and settings to the public it serves.

no action alternative - A required alternative in an EIS or EA, it describes the most likely condition expected to exist in the future if management practices cease or continue without change. Provides a basis (point of reference) for describing the environmental effects of the proposed action and other alternatives.

no surface occupancy stipulation (NSO) - A mineral leasing stipulation that prohibits occupancy or disturbance on all or part of the land surface to protect special values or uses.

non-chargeable volume - The harvested timber volume that is not included in the allowable sale quantity calculations. Such volume includes timber removed from lands unsuitable for timber harvest, fuelwood, and volume from non-commercial or cull trees.

non-commercial thinning - The thinning of commercial-size trees without a subsequent sale of the associated wood products. See thinning, pre-commercial thinning.

non-consumptive use - The use of a resource that does not reduce its supply. For instance, bird watching is a non-consumptive use of a wildlife resource. Boating and fishing are non-consumptive uses of water resources. See consumptive use.

non-functional old-growth - See old-growth forest.

non-game species - Any species of wildlife or fish that is ordinarily not managed or otherwise controlled by hunting, fishing, or trapping regulations.

non-native species - An introduced species that evolved elsewhere, and that has been transported and disseminated purposefully or accidentally.

non-point source pollution - Pollution of the air or water from diffuse sources and which cannot be traced to a single point of origin. For example, air pollutants result from power plants, vehicle emissions and other widespread activities. Water pollutants result from agriculture, forestry, urban, mining, and construction projects, and are generally carried off the land by storm water runoff into waterways.

non-renewable resource - A resource whose total quantity does not increase measurably over time, so that each use of the resource diminishes the supply.

non-timber forest product - Any of a group of plant-derived forest products, (including fungi and lichens) which by definition excludes wood that will be used for lumber or firewood. Common examples include - edibles such as mushrooms and blueberries; medicinal or dietary supplements such as ginseng and goldenseal; floral products such as moss and grape vines; and specialty wood products such as willow branches and weathered, downed wood. Also known as non-traditional forest products.

not administratively available stipulation - A minerals stipulation on an area that prohibits lands from being available for leasing.

notice of intent (NOI) - A notice in the Federal Register that an environmental impact statement will be prepared and considered.

nutrient cycle - The circulation of chemical elements and compounds, such as carbon and nitrogen, in specific pathways from the non-living parts of ecosystems into the organic substances of the living parts of ecosystems, and then back again to the non-living parts of the ecosystem. For instance, nitrogen in wood is returned to the soil as the dead tree decays; the nitrogen again becomes available to living organisms in the soil, and upon their death, the nitrogen is available to plants growing in that soil.

O

objective - In planning, a concise, time-specific statement of measurable planned results that respond to pre-established goals. An objective forms the basis for further planning to define the precise steps to be taken and the resources to be used in achieving identified goals.

obliteration - In engineering, actions taken on a roadway or motorized trail over which travel has been and will continue to be denied. The entrance is obscured, and the wheel tracks or pathway is no longer continuous and suitable for travel. Maintenance needs have been eliminated, and it has been removed from the transportation or trail system inventory. Obliteration does not necessarily imply returning the road prism back to its original contours.

off-highway vehicle (OHV) - Any motorized recreational vehicle capable of being operated off an established road. This includes all-terrain vehicles, motorcycles, rail buggies and full sized pickups or similar vehicles. See all-terrain vehicle.

old field - 1. Idle or abandoned farmland or pasture that is reverting to shrubland or forest. 2. Of or pertaining to the characteristics of an old field.

old-growth community types - Refers to any of the defined (USDA Forest Service 1997) community types, which develop old-growth characteristics at different ages and vary by specific structural attributes.

old-growth forest - A forest distinguished by old trees and related structural attributes. Old-growth encompasses the later stages of stand development that typically differ from earlier stages in a variety of characteristics which may include tree size, accumulation of large wood material, number of canopy layers, species composition, and ecosystem function. Different forest communities reach old-growth conditions at different ages, under different disturbance regimes, and via different management strategies. Within this LRMP and EIS, old-growth is further defined:

> **designated old-growth -** Refers specifically to areas allocated to Prescription Area 1.I., which is managed for old-growth characteristics in general, and old-growth community types in particular (see old-growth community types).
>
> **functional old-growth -** areas of a size, in this LRMP and EIS identified as 300 or more acres, that is adequate to be functional in the ecological sense, rather than an area of "old trees." Functional old-growth tends toward ecological integrity. It is presumed to be resilient to environmental events such as windstorms, insect and disease infestations, and wildland fire. The larger the area, the more likely it will persist with most of its characteristics and vegetative layers intact. See non-functional old-growth.

future old-growth (FOG) – is areas managed in such a way that old-growth characteristics will tend to prevail and old-growth conditions will develop incidentally to the prescribed purpose, or goal, of the area. In this Plan and EIS, old-growth characteristics are expected to develop in areas where limited vegetative manipulation is planned. However, the identification of an area as FOG does not further imply that it will be guaranteed management to promote old-growth characteristics in general, or any old-growth community type in particular.

non-functional old-growth - areas that are assumed not to tend toward ecological integrity because of the minimal amount of interior and corresponding large amount of edge contained within them, or for other reasons. Old-growth areas less than 300 acres in size are assumed to be non-functional. See functional old-growth.

possible old-growth (POG) – are stands likely to qualify as old-growth based on old-growth community type and stand age. Through an examination of stand age (CISC Database) all stands meeting old-growth age criterion were identified as "possible old-growth" and documented in the Preliminary Inventory of Possible Old-Growth, as described in Forest Report R8-FR-62. The identification of a stand as possible old-growth does not imply any management decisions regarding the stand's status as old-growth. These stands (POG) are embedded in, and a part of, the various prescription areas across the forest.

ordinary high water mark - The line on the shore established by the fluctuation of water, and indicated by physical characteristics such as a clear, natural line impressed on the bank, shelving, changes in the character of soil, destruction of terrestrial vegetation, the presence of litter, debris, or other appropriate means that consider the characteristics of the surrounding area.

organic soil - Soil that is at least partly derived from living matter, such as decayed plant material.

outstanding mineral rights - The rights to extract subsurface minerals that are retained by the owner of those minerals, when ownership of the surface of the land (by another party) is transferred to the federal government.

outstandingly remarkable values (ORV) - In recreation management, those scenic, recreational, geological, fish and wildlife, historical, cultural, or other similar values that exist to an outstandingly remarkable degree such that a segment of river qualifies under the Wild and Scenic River Act.

overmature timber - A tree or stand that has attained full development, particularly in height, and has begun to lessen in commercial value because of declining vigor, health, or soundness.

overstocked stand - A stand in which the density of trees is greater than the desired pre-established standard, which is usually tied to species and site index.

overstory - 1. The trees in a two- or multi-layered forest stand that provides the upper crown cover. 2. A more or less continuous cover of branches and foliage formed collectively by the upper portion of the vegetation structure.

P

parent material - The mineral or organic matter from which the upper layers of soil are formed.

park-like structure - Stands with large scattered trees and open growing conditions that are usually maintained by surface fires.

partial retention - A visual quality objective in which evidence of human activities is acceptable but must remain subordinate to the characteristic landscape.

patch - An area of vegetation that is homogeneous in structure and composition. See stand.

patch cutting - Several small clearcuts that create openings in a forest, each larger than a group selection opening. For practical reasons each patch is too small to be tracked as a stand.

pedological - Relating to pedology, which is the study of soil.

Pennsylvanian age - A period of the Paleozoic era thought to have covered the span of time between 320 and 280 million years ago.

percolation - Downward flow or infiltration of water through the pores or spaces of rock or soil.

perennial stream - Any watercourse that normally flows most of the year (greater than 90 percent of an average year) in a well-defined channel, although droughts and other precipitation patterns may influence the actual duration of flow. It contains fish or aquatic insects that have larvae with multiyear life cycles, and water-dependent vegetation is typically associated with it. Contrast with ephemeral stream and intermittent stream.

periodic annual increment (PAI) - The average growth of a tree or stand observed over a specific period of years (a typical measurement period being ten years).

permeability - The capacity of a soil to transmit water or air.

permitted grazing - Grazing on a National Forest range allotment under the terms of a grazing permit.

personal use - The use of a forest product, such as firewood, for home use as opposed to commercial use or sale.

persons at one time (PAOT) - A recreation capacity measurement indicating the number of persons that can comfortably occupy, or use, a facility or area at one time.

PETS species - The inclusive group of federally Proposed, Endangered and Threatened species, and Sensitive species as identified by a Regional Forester.

planning area - In this document, the area of National Forest System land covered by a Regional Guide or Forest Land and Resource Management Plan.

planning period - The 50-year time frame for which goods, services, and effects were projected in the development of the Forest Plan.

plastic - 1. A characteristic or index property of soils used as in expressing soil behavior, frequently in relation to soil stability. 2. A condition existing between semiliquid and semisolid states.

plastic limits - 1. The moisture content at which a soil changes from a semisolid to plastic state in which soils may be molded or deformed under pressure. 2. A soil physical property utilized as an engineering index value in describing or evaluating soil behavior.

poletimber-size - Trees that are at least 5.0 inches DBH, but smaller than the minimum size for sawtimber. Also known as small roundwood.

porosity - The ratio of the volume of voids in the soil to the total volume of the mass or solids, expressed as a percentage.

possible old-growth (POG) - See old-growth forest.

potential roost tree - (Indiana bat management), In two-aged shelterwood silvicultural treatments is any live tree of the species listed below that is equal to or greater than 9 inches DBH.

Acer rubrum (red maple)
Acer saccarinum (silver maple)
Acer saccharum (sugar maple)
Carya cordiformis (bitternut hick.)
Carya glabra (pignut hickory)
Carya lacinosa (shellbark hick.)
Carya ovalis (red hickory)
Carya ovata (shagbark hickory)
Carya spp. (other hickories)
Fagus grandifolia (Am. beech)
Fraxinus americana (white ash)
Fraxinus pennsylvanica (green ash)
Liriodendrum tulipifera (tulip tree)
Nyssa sylvatica (blackgum)
Oxydendrum arboreum (sourwood)
Pinus echinata (shortleaf pine)
Pinus vigida (pitch pine)
Pinus virginiana (Virginia pine)
Platanus occidentalis (sycamore)
Populus deltoides (east. cottonwood)
Quercus alba (white oak)
Quercus coccinea (scarlet oak)
Quercus imbricaria (shingle oak)
Quercus prinus (chestnut oak)
Quercus rubra (northern red oak)
Quercus stellata (post oak)
Quercus velutina (black oak)
Robinia pseudoacacia (black locust)
Sassafras albidum (sassafras)
Ulmus americana (American elm)
Ulmus rubra (slippery elm)

precommercial thinning - The removal from a stand of some of the trees that are too small to be sold for timber products, to promote growth of the remaining, more desirable trees. See thinning.

predator - An animal that lives by preying on other animals. Predators are at or near the tops of food chains.

pre-existing use - A land use that may not conform to a current zoning ordinance but which existed prior to the enactment of the ordinance.

preparatory cut - The removal of trees near the end of a rotation to open the canopy so the crowns of seed bearing trees can enlarge to improve seed production and encourage natural regeneration.

prescribed burning - The controlled application of fire to wildland fuels in either their natural or modified state, under specified environmental conditions that allows the fire to be confined to a predetermined area, and produce the fire behavior and fire characteristics required to attain planned fire treatment and resource management objectives.

prescribed fire plan - A written statement defining the objectives to be attained as well as the conditions of temperature, humidity, wind direction and speed, fuel moisture and soil moisture under which a fire will be allowed to burn. A prescription is generally expressed as acceptable ranges of the prescription elements and the limit of the geographic area to be covered.

prescribed fire - A fire ignited by management actions to meet specific objectives. More specifically, it is the controlled application of fire to wildland fuels in either their natural or modified state, under specified environmental conditions that allows the fire to be confined to a predetermined area, and produce the fire behavior and fire characteristics required to attain planned fire treatment and resource management objectives.

prescribed natural fire (PNF) - Now an obsolete term, a naturally-ignited (e.g. by lightning or volcanic activity) wildland fire burning under specified conditions where the fire was confined to a predetermined area and producing the fire behavior and fire characteristics to attain planned fire treatment and resource management objectives, therefore not requiring a suppression response, like a wildfire did. Currently, a PNF fire is termed a wildland fire use fire.

prescription area - A defined area to which a management prescription is applied.

prescription - See management prescription.

present net value (PNV) - The measure of the economic value of a project when costs and revenues occur in different time periods. Future revenues and costs are "discounted " to the present by an interest rate that reflects the changing value of a dollar over time. The assumption is that dollars today are more valuable than dollars in the future. PNV is used to compare project alternatives that have different cost and revenue flows. Also called present net worth; net present value.

productivity - The ability of an area to provide goods and services or to function ecologically.

property line - 1. A land ownership division line between two parcels of land. 2. A separation of real property rights.

proposed species - Species proposed for federal listing as threatened or endangered under provisions of the Endangered Species Act of 1973.

Public Forest Service Road - A National Forest System road that is open to public travel and has been approved for inclusion into the Public Forest System Road Program.

public involvement - In planning, the use of appropriate procedures to inform the public, obtain early and continuing public participation, and consider the views of interested parties in planning and decision making.

public land - Land for which title and control rests with a government, at the federal, state, regional, county, or municipal level.

puddling – In soil science, refers to a physical change in soil properties that results in a decrease in porosity and an increase in soil bulk density and soil strength.

Q

quartzose sandstone - Sedimentary rock that contains quartz as a principal constituent.

R

raking - A mechanical site preparation method using a standard or toothed blade (brush rake) mounted on the front of a crawler tractor that allows the gathering and placement of logging or clearing debris into windrows or piles. See windrowing.

range of variability - Refers to the range of sustainable conditions in a healthy ecosystem, which is determined by time, processes, species, and the land itself. For instance, ecosystems that have a 10-

year fire cycle have a narrower range of variation than ecosystems with 200 to 300-year fire cycles. Also called the historic range of variability or natural range of variation.

range - Land on which the principle natural plant cover is composed of native grasses, forbs, and shrubs that are valuable as forage for livestock and big game.

ranger district - The administrative sub-unit of a national forest, supervised by a District Ranger who reports directly to a Forest Supervisor.

raptor - Predatory bird, such as a falcon, hawk, eagle, or owl.

rare community - A unique biological community that is expected or known to harbor a sensitive community or rare species.

rare community management zone - Defined in this document as the area around some rare communities allocated to the Rare Community Prescription Area, in which direction for management promotes and protects the values of the rare community.

rare community site - Defined in this document as the actual physical extent of any of the rare communities in the Rare Community Prescription Area.

RARE II (Roadless Area Review and Evaluation) - The national inventory of roadless and undeveloped areas within National Forests and Grasslands.

recharge - The addition of water to ground water by natural or artificial processes.

Record of Decision (ROD) - In planning, the official document in which a deciding official states the alternative that will be implemented from a prepared environmental impact statement.

Recreation Information Management (RIM) - An electronic system of banking or storing recreation information. RIM furnishes current and meaningful information on the identification, location, dimensions, condition, and use of each recreation area on National Forest System lands.

Recreation Opportunity Spectrum (ROS) - A framework for stratifying and defining classes of outdoor recreation environments, activities and experience opportunities along a spectrum defined by the following six classes of opportunities:

primitive - Minimum modification.

semi-primitive non-motorized - Minimum modification. Motorized access not allowed.

semi-primitive motorized - Minimum modification. Motorized access is allowed.

roaded natural - Moderate modification.

rural – Heavy modification.

urban - High degree of modification.

recreation visitor day (RVD) - A unit of measure of recreation use equivalent to 12 hours of accumulated recreational activity by one or more persons during one or more visits to the National Forest. For example, 1 person for 12 hours, 2 persons for 6 hours, 3 persons for 4 hours are each one RVD.

reforestation - The restocking of a harvested or poorly stocked forest by either natural or artificial means. See regeneration, deforestation, afforestation.

regeneration – 1. The renewal of a forest, including the regeneration cut(s) and subsequent reforestation. 2. A young cohort of trees generally in the seedling stage. Obsolete term: reproduction. See advanced regeneration, artificial regeneration, and reforestation.

regeneration method - A cutting procedure by which a new age class is created; the major methods are clearcutting, seed tree, shelterwood, and selection.

Regional Forester - The official of the USDA Forest Service responsible for administering an entire region of the Forest Service.

rehabilitation - The process of repairing damage done to the ecosystem or a part of it, such that natural processes will again function in the repaired system. Contrast with restoration.

release cutting - The removal of competing vegetation to allow desired tree species to grow.

removal cut - The removal of the last seed bearing or shelter trees after a regeneration cohort has been established.

reserved mineral rights - The rights to extract subsurface minerals that are retained by a landowner, when ownership of the surface of the land is transferred to the federal government. Basic standards for conducting mineral operations are inserted into the deed held by the private owner of the minerals.

residual trees – The live trees remaining after a natural or artificial disturbance (e.g., a wind event or timber harvest).

residuum - Unconsolidated, weathered, or partly weathered mineral material that accumulates by disintegration of bedrock in place.

resilience - The ability of an ecosystem to maintain diversity, integrity, and ecological processes following a disturbance.

responsible official - The USDA Forest Service employee who has been delegated the authority to carry out a specific planning action.

restoration - The process of modifying an ecosystem to achieve a desired, healthy, and functioning condition. Contrast with rehabilitation.

revegetation – The re-establishment and development of a plant cover by either natural or artificial means, such as re-seeding.

rill erosion - The removal of soil through the cutting of many small, but conspicuous, channels where runoff concentrates.

riparian area - A three-dimensional ecotone of interaction between terrestrial and aquatic ecosystems, which extends down into the groundwater, up above the canopy, outward across the floodplain, up the near-slopes that drain to the water, laterally into the terrestrial ecosystem, and along the watercourse at a variable width. See riparian corridor.

riparian corridor - In this document, the administrative zone that encompasses riparian areas and associated upland components. It includes at a minimum the 100-year floodplain along perennial streams or other water bodies, and intermittent streams. See riparian area.

riparian-associated species - Are species that are dependent on riparian areas during at least one stage of their life cycle.

riparian function - An activity that occurs in a riparian area without the influence of management activities. Examples of these functions include erosion and deposition by the streams, nutrient cycling, movement and storage of water, and vegetative succession.

ripping - The use of a subsoiler or chisel plow pulled by a large tractor to break up, deep shatter, and partially mix compacted soils and improve porosity. Ripping is a mechanical site preparation activity.

Roadless Area Review and Evaluation (RARE II) - The national inventory of roadless and undeveloped areas within National Forests and Grasslands.

roadless area - National Forest System lands evaluated for potential wilderness that meet one or more of the following criteria (FSH 1909.12, Chapter 7):

1) They contain 5,000 acres or more
2) They contain less than 5,000 acres but:
   a) Due to physiography or vegetation, they are manageable in their natural condition.
   b) They are self-contained ecosystems such as an island.
   c) They are contiguous to existing wilderness, primitive areas, Administration-endorsed wilderness, or roadless areas in other Federal ownership, regardless of their size.
3) They do not contain improved roads maintained for travel by standard passenger-type vehicles, except as permitted in areas east of the 100th meridian. Criteria for inventorying roadless areas east of the 100th meridian recognize that much, if not all of the land, shows some signs of human activity and modification even though they have shown high recuperative capabilities. Roadless areas east of the 100th meridian qualify for inventory as potential wilderness if:
   a) The land is regaining a natural, untrammeled appearance.
   b) Improvements existing in the area are being affected by the forces of nature rather than humans and are disappearing or muted.
   c) The area has existing or attainable National Forest System ownership patters, both surface and subsurface, that could ensure perpetuation of identified wilderness values.
   d) The location of the area is conducive to the perpetuation of wilderness values. Consider the relationship of the area to sources of noise, air, and water pollution, as well as unsightly conditions that would have an effect on the wilderness experience. The amount and pattern of Federal ownership is also an influencing factor.
   e) The area contains no more than a half-mile of improved road for each 1,000 acres, and the road is under Forest Service jurisdiction.
   f) No more than 15 percent of the area is in non-native, planted vegetation.
   g) Twenty percent of less of the area has been harvested within the past ten years.
   h) The area contains only a few dwellings on private lands and the location of these dwellings and their access needs insulate their effects on the natural conditions of federal lands.

rockhouse - See rockshelter.

rockshelter - An area, usually within a cliffline, where erosion, or rock fall has created a shallow void.

rotation – In silviculture, the number of years required for establishment and growth of trees to a specified condition of maturity, at which point they are harvested. The term rotation applies to even-age management and does not apply to two-age or uneven-age systems. See cutting cycle.

roundwood - Logs, bolts, or other round sections cut from trees for industrial manufacture or consumer uses. See sawtimber; poletimber-size.

run-off - The portion of precipitation that flows over the land surface or in open channels.

S

sacred site - Any specific, discrete, narrowly delineated location on Federal land that is identified by an Indian tribe or Indian individual determined to be an appropriately authoritative representative of an Indian religion, as sacred by virtue of its established religious significance to, or ceremonial use by, an Indian religion; provided that the tribe or appropriately authoritative representative of an Indian religion has informed the agency of the existence of such a site (Executive Order 13007). Examples include - places that figure in a tribe's traditions about its origins and interactions with the supernatural, places where religious rituals are customarily carried out or sites representing ancestral living places or cemeteries often though of as archaeological sites.

salvage harvest - The harvest of dead trees or trees being damaged or killed by injurious agents other than competition, to recover economic value that would otherwise be lost.

sandstone - Sedimentary rock containing dominantly sand-size particles.

sanitation – In silviculture, the removal (by harvest or otherwise) of dead, damaged or susceptible trees primarily to prevent the spread of pests or disease and to promote forest health.

sapling - A tree, at least 1.0 inch DBH, and less than 5.0 inches DBH.

savanna - See wooded grassland/shrubland.

sawtimber - Trees that contain at least one 12-foot, or two 8-foot logs that can be made into lumber, that are typically at least 11 inches DBH for hardwood species, and 9 inches DBH for softwood species. Also referred to as large roundwood, or saw timber.

scale - In ecosystem management, it refers to the degree of resolution at which ecosystems are observed and measured.

scarification - A mechanical site preparation method using a machine that clears herbaceous and small woody vegetation and mixes soil to a depth of up to 4 inches.

scenery management system (SMS) - A system of inventory, analysis, and management of scenery within an ecosystem context.

scenery management - The art and science of arranging, planning, and designing landscape attributes relative to the appearance of places and expanses in outdoor settings.

scenic attractiveness - The scenic importance of a landscape based on human perceptions of the intrinsic beauty of landform, rockform, waterform, and vegetation pattern. Reflects varying visual perception attributes of variety, unity, vividness, intactness, coherence, mystery, uniqueness, harmony, balance, and pattern. It is classified as: Distinctive Typical or Common Undistinguished.

scenic class - A group of seven classes used in forest planning to rank the relative importance or value of landscape areas with similar characteristics of scenic attractiveness and landscape visibility. A level 1 area has the highest value and Level 7 has the lowest value.

scenic integrity levels (SILs) - They are the proposed management objectives that are presented in the alternative development of the Environmental Impact Statement. Usually they are described at the management prescription level. Scenic Integrity Levels (SILs) are defined by minimal acceptable levels or performance standards in each alternative. SILs are Very High, High, Moderate, Low, and Very Low. The SILs define the degrees of acceptable deviation in form, line, color, and texture that may occur at any given time. (Full description in Agricultural Handbook 701)

scenic integrity objective (SIO) - They are the management objectives that are adopted through the approval of the Forest Land and Resource Management Plan. Usually described at the management prescription level. Scenic integrity objectives (SIO's) are defined by minimal acceptable levels or performance standards in the Forest Land and Resource Management Plans. SIO's are Very High, High, Moderate, Low, and Very Low. The SIO's define the degrees of acceptable deviation in form, line, color, and texture of the landscape, that may occur at any given time. (Full description available in Agricultural Handbook 701).

scoping - In planning, the ongoing process to determine public opinion, receive comments and suggestions, and determine issues during the environmental analysis process. Scoping involves public meetings, telephone conversations, letters or other communication methods.

scoured ephemeral channel - A definable channel of water flow in which surface waterways converge with enough energy to remove soil, organic matter, and leaf litter on an annual basis.

second growth - Forest growth that became established after some kind of interference, such as cutting, fire, or insect attack, with the previous forest cover.

sediment - Material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by water, wind, ice or mass-wasting and has come to rest on the earth's surface.

seedling - A tree from the time of emergence from the seed, until it reaches sapling size (1 inch DBH). For silvicultural inventories, only established seedlings are counted. A hardwood seedling is considered established at one foot tall, and a softwood seedling at six inches tall.

seed tree - A residual tree left after harvest as a seed source for the next cohort.

seed tree regeneration method - An even-aged regeneration method where all merchantable trees in a stand are removed in a single cut, except for a small number of widely dispersed trees retained for seed production.

seep - A wet area where a seasonal high water table intersects with the ground surface. Seeps that meet the definition of a wetland are included in the Riparian Corridor Prescription Area. Seeps may also be eligible for management according to the Rare Community Prescription Area.

senescent tree - A tree that is reaching the end of its life span and is beginning to die. It may exhibit dead branches, a broken or deformed top or bole, internal or external bole decay and/or root decay.

sensitive species - Those plant and animal species identified by a Regional Forester for which population viability is a concern, as evidenced by (1) significant current or predicted downward trends in population numbers or density; or (2) significant current or predicted downward trends in habitat capability that would reduce a species' existing distribution.

seral - Pertaining to a series of ecological communities that follow one another in the course of the biotic development of an area or the formation from pioneer stage to climax. See successional path.

seral stage - The stage of succession of a plant or animal community that is transitional. If left alone, the seral stage will give way to another plant or animal community that represents a further stage of succession. Often proceeded by a modifier as in: (1) early seral stage, which is characterized one or more of the first communities expected to occur in the area, e.g., old-field vegetation in the transition to forest, or pines in the transition to hardwoods; or (2) late seral stage, which is characterized by one or more of the last communities expected to occur in the area, e.g., hemlock-hardwood forest in a cove, or a huckleberry thicket on a thin soil, rocky sandstone glade. Seral stage used with a modifier such as early or late is often inaccurately used to indicate the relative age of a stand of trees. An early seral stage CAN be young age forest, but it can also be a shrubland or grassland without any tree species or an older stand of trees such as pine or aspen in an area where they are usually replaced by other species through succession. See successional stage.

shale - Sedimentary rock formed by indurations of clay, silty clay, or silty clay loam deposit and having the tendency to split into thin layers.

shearing - An activity in which a medium to large tractor with angled (K-G) or V-shaped sharpened blades clears residual standing trees (generally less than 6-8 inches DBH) . Shearing is a mechanical site preparation activity.

sheet erosion - Essentially the uniform removal of soil from an area without the development of conspicuous water channels. The channels are tiny or tortuous, exceedingly numerous, and unstable; they enlarge and straighten as the volume of runoff increases.

shelterwood - 1) An even-aged regeneration method involving the cutting of most trees, leaving those needed to produce sufficient shade to produce an new age class in a moderated microenvironment, 2) residual trees left to provide shade for a new cohort.

shelterwood regeneration method - An even-aged regeneration method involving the cutting of most trees, leaving those needed to produce sufficient shade to produce an new age class in a moderated microenvironment.

shelterwood tree – A residual tree left after harvest to provide shade for a new cohort.

shelterwood with reserves regeneration method - A two-aged regeneration method in which some or all of the shelter trees are retained, well beyond the normal period of retention, to attain goals other than regeneration. Also referred to as the two-aged shelterwood method.

short-term effects - In planning, those effects that usually occur within ten years.

shredding - An activity using a machine designed to sever and shred the boles of standing trees, cull logs and stumps, leaving a mulch of small shreds, chips, and bark on the soil surface. Shredding is a mechanical site preparation activity.

significant bat cave - In this document, a cave in which a minimum of 50 hibernating Indiana bats or 5 Virginia or Rafinesque's big-eared bats have been found. These caves and the National Forest System land within a ¼ mile radius around each cave as been allocated to the Significant Bat Cave Prescription Area.

significant heritage resource - An archaeological site or historic property that meets the criteria for eligibility for inclusion on the National Register of Historic Places. Heritage properties may be

significant issue - In planning, an area of unresolved conflict concerning management of the National Forest.

siltstone - Sedimentary rock containing dominantly silt-size particles or fragments of sediment or rock, produced by mechanical weathering of a larger rock mass.

silvicultural system - A management process whereby forests are tended, harvested, and replaced, resulting in a forest of distinctive form. Systems are classified according to the method of carrying out the fellings that remove the mature timber and provide for regeneration, as well as the type of forest that results.

silviculture - The theory, practice, art and science of controlling the establishment, composition, growth, and quality of forest stands and trees, in order to meet management objectives.

single tree selection - An uneven-aged regeneration method in which individual trees from certain size and age classes are removed across a stand to achieve desired stand structural characteristics. Also referred to as individual tree selection.

sink hole - A depression, mostly circular in shape, in a karst area. Its drainage is subterranean and is commonly funnel shaped.

sink populations - Population sinks are areas with low reproductive success and the persistence of the population is dependent on immigration.

site preparation - A reforestation activity, normally following a timber harvest, that is designed to control vegetation that could interfere with the establishment of the desired species, or designed to expose mineral soil sufficiently for the establishment of the desired species. Site preparation treatments could include mechanical, manual, chemical, prescribed fire, or a combination of such treatments.

skid road - A temporary blade-constructed pathway having a road-like function and appearance, used to drag felled trees or logs to a landing. Several skid trails normally branch off of a skid road.

skid trail - A temporary nonstructural pathway used to drag felled trees or logs to a skid road or landing, resulting in some ground disturbance. One or more skid trails normally connect to a skid road.

skidding - The movement of logs by dragging from stump to a log landing.

skyline logging - A cable logging system used to remove timber from steep slopes where logs are brought up-slope on a suspended cable, or skyline.

slash - The residue left on the ground after timber cutting or resulting from a storm, fire, or other natural event. Slash includes unused logs, uprooted stumps, broken or uprooted boles, branches, bark and other material.

slope distance - Distance that is measured along the surface of the ground.

slope stability - The susceptibility of a slope to erosion and landslides.

Slow-the-Spread - A strategy developed to slow the expansion of the generally infested area.

slump - A mass movement process characterized by a landslide involving a shearing and rotary movement of a generally independent mass of rock and earth along a curved slip surface.

small game species - Any bird or other small animal species that is normally hunted or trapped.

snag - A standing dead tree from which the leaves and most of the limbs have fallen. Such a tree may be at its original height or have been broken off.

soil compaction - A reduction of soil volume, which results in alteration of soil chemical, physical and biological properties and qualities.

soil depth - The distance from the top of the soil to the underlying bedrock. The depthis expressed as one of the following categories: shallow, 0-20 inches; , moderately deep, 20-40 inches; deep, 40-60 inches; or very deep, more than 60 inches.

soil fertility - The quality of a soil that enables it to provide nutrients in adequate amounts and in proper balance for the growth of specified plants.

soil health - The soil's current condition relative to its inherent capacities. A healthy soil is one whose capacity to perform its functions is not impaired, or not lower than its inherent or "natural" capacity.

soil mapping unit - A collection of individual soil areas or miscellaneous areas delineated in a soil survey and identified on a map by a unique symbol. Comparable map units in adjoining survey areas are similar.

soil productivity - The potential capability of a soil to supply the physical, chemical, and biological needs of plants over the long-term, as influenced by climate, parent materials, topographic on the landscape (including aspect), and land use history.

soil quality - 1. A soil’s inherent or “natural” capacities to perform its functions to sustain productivity. 2. The capacity of a soil to function within ecosystem boundaries to sustain biological productivity, maintain environmental quality and promote plant and animal health.

soil survey - The systematic examination, description, classification, and mapping of soils in an area.

soil texture - The relative proportions of sand, silt and clay in a soil.

sound wood - Wood that is in solid condition, free from structural damage, decay, or rot.

source populations - Population sources are areas where reproductive success is high and a surplus of young are produced.

Southern yellow pine - A group of ten *Pinus* species found in the southeastern United States. Three of these species, shortleaf pine, Virginia pine, and pitch pine commonly occur on the DBNF. Another of these species, loblolly pine, has been planted on the DBNF beyond its historic range.

special area - Area designated for special management based upon the USDA Forest Service Manual, Secretary of Agriculture authority or congressional authority.

special use authorization - A permit, term permit, temporary permit, lease, easement, or other written instrument that grants rights of privileges of occupancy and use subject to specified terms and conditions on National Forest System land.

species of interest - A category of selection for management indicator species, specifically stated as non-game species of interest.

Spectrum - A computer-modeling tool to address ecosystem management issues. It models alternative resource management scenarios applied to landscapes through time in support of strategic and tactical planning. This includes scheduling vegetation manipulation activities to achieve ecosystem management objectives; modeling resource effects and interactions within management scenarios; and exploring tradeoffs between alternative management scenarios in support of decision-making.

speleogen - An erosion feature of a cave; a surface that is formed by solution, such as a scallop, pendant, or dome pit.

speleothems - A natural mineral formation or deposit occurring in a cave.

spring - A water source located where water begins to flow from the ground due to the intersection of the water table with the ground surface. Springs generally flow throughout the year. In this document, springs that are the source of perennial or intermittent streams are allocated to the Riparian Corridor Prescription Area.

stage construction - For analysis purposes, stage construction is used to address specific road segments of concern (i.e., stream crossings) during construction of a road project. The intent being is to require construction of a particular road segment of concern (potentially of high risk for environmental damages) as fully designed prior to proceeding further, so as to protect sensitive resources (e.g., water quality, aquatic habitats, and slope stability). This is in contrast to the more traditional definition commonly used to mean, "Construct to a lower standard initially, but returning at a later time to raise to a higher standard of construction." For example, a road would be initially constructed without gravel surfacing, with application of gravel surfacing planned for the following year.

staging cave - A cave at which bats swarm prior to beginning hibernation. Staging caves may or may not also serve as hibernacula.

stand - 1. In silviculture, a contiguous group of trees sufficiently uniform in age-class distribution, composition, and structure, and growing on a site of sufficiently uniform quality, to be a distinguishable unit, 2. In ecology, a contiguous group of similar plants.

stand improvement - An intermediate treatment, not involving timber harvest, made to improve the composition, structure, condition, health, and growth of stands. Formerly known as timber stand improvement or wildlife stand improvement.

standard - Requirement found in a LRMP, which govern actions taken to meet objectives. Standards often preclude or impose limitations on management activities or resource uses, generally for environmental protection or public safety. Standards are mandatory, and deviation from a standard requires a LRMP amendment.

steep and mountainous land - In planning, lands exceeding a 45% slope gradient.

stewardship - In this document, the protection of the land and its resources to pass along healthy ecosystems to future generations.

stocking - 1. In silviculture, an indication of growing-space occupancy of live trees relative to a pre-established standard. Common indices of stocking are based on percent occupancy, basal area, relative density, stand density index, and crown competition factor. 2. In wildlife and fisheries management, the intentional and deliberate placement of a species in a specific location.

stream order - A categorization of a stream according to its size. Stream order increases incrementally, with the order increasing with stream size, when one stream flows into a stream of equal or greater size. For example, first order streams are unbranched and usually found at the head of drainage basins. Second order streams are formed when two first order streams come together.

strike and dip - A geological phrase used to describe fault planes. Strike is the direction or trend taken by a structural surface, e.g. a bedding or fault pane, as it intersects the horizontal. Dip is the angle that a structural surface, e.g. a bedding or fault plane, makes with the horizontal, measured perpendicular to the strike of the structure and in the vertical plane.

structure - In ecology, the horizontal and vertical arrangement of ecological components. A study of an area's structure might reveal a mosaic of vegetation.

succession - The natural replacement, in time, of one plant community with another. Conditions of the prior plant community (or successional stage) create conditions that are favorable for the establishment of the next stage.

successional path - The sequence of successional communities. Succession may have one path or multiple paths depending on competition, mortality of individuals, and non-lethal disturbances. There may be one endpoint or multiple endpoints, depending on the degree of change in climate and soil properties.

successional stage - A stage of development of a plant community as it moves from bare ground to climax. For example, the grass-forb stage of succession precedes the woody shrub stage. This phrase is often used with modifiers (such as early and late successional stage) to imply the age of a forest, although the use of the phrase in this manner is not strictly accurate. See seral stage

suitable for timber production – Forest land where timber is produced on a scheduled basis. On the DBNF, lands suitable for timber production may be further divided into two subcategories: lands having timber production emphasis, or lands having non-timber emphasis. See unsuitable for timber production; timberland.

suitability - The appropriateness of the application of certain resource management practices to a particular area of land, as determined by an analysis of the economic and environmental consequences and the alternative uses foregone. A unit of land may be suitable for a variety of individual or combined management practices. For example, in this document, each prescription area

has been identified as suitable or not suitable for timber production and management reflects the designation.

suppression (gypsy moth) - Reduction of gypsy moth populations in heavily infested areas.

surface resources - Renewable resources that are on the surface of the earth. Examples include timber and forage, in contrast to ground water and minerals, which are located beneath the surface.

surface use plan of operations - In minerals management, a plan for surface use, disturbance, and reclamation on a leasehold.

sustainability - The ability of an ecosystem to maintain ecological processes and functions, biological diversity, and productivity over time.

sustained yield - The yield that a renewable resource can produce continuously at a given intensity of management.

T

tail tree – In cable logging, a tree used to elevate or anchor the end of the skyline cable at the farthest point from the yarder.

target - A national forest's annual objectives for accomplishment within a natural resource program. Targets represent the commitment the USDA Forest Service has with Congress to accomplish the work that has been funded, and are often used as a measure of the agency's performance.

terrace - A step-like or raised surface, bordering a valley floor or stream, that represents the former position of a flood plain.

theme - In planning, a broad and general description of management direction for a national forest that suggests a particular emphasis towards particular resources, uses, or conditions. Themes are used as the basis for creating more detailed alternatives to current LRMP management direction.

thinning - An intermediate treatment or harvest made to reduce tree density, primarily to improve growth, enhance forest health, or recover potential mortality. See non-commercial thinning, pre-commercial thinning.

threatened species - A plant or animal species likely to become endangered throughout all or a specific portion of their range within the foreseeable future, as designated by the Secretary of the Interior or the Secretary of Commerce under the Endangered Species Act of 1973.

tiering - Used to imply that a stand-alone management document also encompasses and is consistent with the direction of a higher level document. For example - The Fire Management Plan tiers to the Land and Resource Management Plan.

timber - Trees or wooded land regarded as a source of wood; a renewable natural resource.

timber harvest - The sum of activities making up a logging operation, including the felling, skidding, decking, loading, and hauling of timber products from the sale area.

timber management - A broad term that includes all of the silvicultural and technical aspects of forestry related to timber production.

timber production - The purposeful growing, tending, harvesting, and regeneration of regulated crops of trees to be cut into logs, bolts, or other round sections for industrial or consumer use. Timber production does not include the production of fuelwood. Also referred to as wood fiber production.

timber products - Logs, bolts, or other round sections available for industrial or consumer use (roundwood), or secondary products produced from roundwood, such as lumber. See roundwood.

timber sale - A process that is initiated by a management decision to implement a silvicultural prescription for a timber harvest. The process includes the sale area layout, designation of the timber that is to be harvested, timber appraisal, advertisement, bidding, award of sale, implementation of the timber harvest, and the closing of the sale.

timber sale program quantity - The volume of timber planned for sale during the first decade of the planning horizon. It includes the allowable sale quantity (chargeable volume), and any additional material (non-chargeable volume), planned for sale. The timber sale program quantity is usually expressed as an annual average.

timber stand improvement (TSI) - Obsolete term. See stand improvement.

timberland - Land declared suitable for producing timber crops, not withdrawn from timber production by statute or administrative regulation, and capable of growing at least 20 cubic feet of industrial wood per acre-year. Also referred to as commercial forest land.

timing limitation - In mineral management, a prohibition of surface use during specified time periods to protect identified resource values. Also referred to as a seasonal restriction.

toe slope - The hill slope position that forms the gently inclined surface at the base of a hill slope.

topographic - 1. Pertaining to topography. 2. A type of map that indicates topographic contours.

topography - The general configuration or shape of the earth's surface, including its relief or elevation, and the position of its natural features.

track-hoe - A powered vehicle mounted on crawler tracks with a straight-bottomed blade mounted on the front for pushing and an excavation bucket mounted on the rear for digging.

tractor logging - A logging method that uses crawler tractor (bulldozer) or rubber-tired tractor (usually a center-articulated skidder) to carry or skid logs from the stump to a collection point.

treatment area - The site-specific location of a resource improvement activity.

tree - A woody perennial plant, typically large or capable of becoming large, with a well-defined stem or stems carrying a more or less definite crown. The USDA Forest Service identifies certain species as capable of becoming trees[1].

turbidity - 1. The state, condition, or quality of opaqueness or reduced clarity of water, due to the presence of suspended matter as with sediment. 2. A measure of the ability of suspended matter to disturb or diminish the penetration of light.

two-aged management - See two-aged silvicultural system.

[1] USDA Forest Service, Silvics of North America, Ag. Handbook 654, Vol. 1 & 2.

two-aged shelterwood - See shelterwood with reserves.

two-aged silvicultural system - A planned sequence of treatments designed to maintain and regenerate a stand with two age classes. On the DBNF, generally 10-15 square feet of BA is retained to grow for another cutting cycle. Formerly known as irregular shelterwood or two-aged shelterwood. See shelterwood with reserves.

type conversion - The natural or artificial change of a stand's existing forest type to another forest type.

U

understocked stand - A stand in which the density of trees is less than the desired pre-established standard, usually tied to species and site index.

understory - The trees and other vegetation growing under a more or less continuous cover of branches and foliage known as the overstory.

undertaking - In heritage resource management, any project, activity, or program that can result in changes in the character or use of an archaeological site or historic property.

uneven-aged management - See uneven-aged silvicultural system.

uneven-aged silvicultural system - A planned sequence of treatments designed to maintain and regenerate a stand with three or more age classes. Also known as uneven-aged management. Single tree selection and group selection regeneration methods develop and maintain uneven-aged stands.

unsuitable for timber production – Forest land that is not managed for timber production. On the DBNF, lands unsuitable for timber production may be further divided into two subcategories: lands where tree cutting, tree removal, or timber harvest may occur on an unscheduled basis to attain desired future conditions; or lands where timber harvest is not allowed. Determinations for suitability are based on the criteria in paragraphs (a) through (d) of 36 CFR 219.14. See suitable for timber production.

use, allowable - An estimate of proper range use. Forty to fifty percent of the annual growth is often used as a rule of thumb on ranges in good to excellent condition. It can also mean the amount of forage planned to accelerate range rehabilitation.

V

variety class - A way to classify landscapes according to their visual features. This system is based on the premise that landscapes with the greatest variety or diversity has the greatest potential for scenic value.

vegetation management - Any activity that is designed primarily to alter or modify vegetation to meet desired conditions on land or water having vegetation cover.

vertical diversity - The diversity in a stand that results from the different layers or tiers of vegetation.

viability - The tendency of a species to remain at population levels sufficient to assure its continued existence on the landscape, expressed as a likelihood of achievement.

viable population - A population that has the estimated numbers and distribution of reproductive individuals to insure that its continued existence is well distributed in the planning area.

visual quality objective - An obsolete term used in scenery management to identify a set of measurable goals for the management of forest visual resources.

visual resource - A part of the landscape important for its scenic quality. It may include a composite of terrain, geologic features, or vegetation.

W

water table - The upper surface of groundwater. Below the water table, the soil is saturated with water.

water yield - The runoff from a watershed, including groundwater outflow.

watershed - 1. In general, the entire region drained by a waterway into a lake or reservoir. 2. More specifically, the land above a given point that contributes water to the stream flow at that point.

watershed health index - A measure that characterizes the condition of 5^{th} level watersheds or HUCs with respect to current and future sediment load increases.

watershed level or hydrologic unit code (HUC) - A cataloging system developed by the US Geological Survey and the Natural Resource Conservation Service to identify watersheds, and to standardize hydrological unit delineations for geographic description and data storage purposes.. They are typically reported at the large river basin or smaller watershed scale.

wetland - Area that is inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include, for example, swamps, marshes, bogs and similar areas.

wild and scenic river - A river, or river section, designated under the Wild and Scenic Rivers Act of 1964. A river can be classified under the following three categories:

> **wild river -** Free of impoundments and generally inaccessible except by trail, and within watersheds or shorelines that are essentially primitive.
>
> **scenic river -** Free of impoundments but accessible by roads, and within watersheds or shorelines that are still largely primitive and undeveloped..
>
> **recreational river -** Readily accessible by roads, with some development along their shorelines and may have undergone some impoundment or diversion in the past.

Wilderness - A Congressionally designated area that is essentially unaltered and undisturbed by humans. Management of this area preserves and protects its physical and biological characteristics.

wildfire - Now an obsolete term for a fire type , an unwanted wildland fire, or more specifically, a fire occurring on wildland that is not meeting management objectives and thus requires a suppression response. Wildfires can be ignited by humans or by natural events such as lightning. The term wildfire exists for use in promoting fire prevention.

wildland fire use fire - A naturally-ignited (e.g. by lightning or volcanic activity) wildland fire burning under specified conditions as outlined in a forest Fire Management Plan, where the fire is confined to a predetermined area and producing the fire behavior and fire characteristics to attain planned fire treatment and resource management objectives, therefore not requiring a suppression response.

wildland fire - Any non-structure fire, other than prescribed fire, that occurs in the wildland. The term encompasses fires previously identified as "wildfires," which required a suppression response, and "prescribed natural fires," which were used to meet resource objectives. Both of these terms are now considered obsolete and the appropriate response by fire personnel to " a wildland fire" cannot be discerned without additional information.

fire use – A broad term encompassing the combination of wildland fire use fires and prescribed fires to meet resource objectives.

wildland/urban interface - The line, area, or zone where structures and other human development meet or intermingle with flammable natural fuels, such as leaf litter or logging slash.

wildland - Any area in which development is essentially non-existent, except for roads, railroads, power lines, and similar transportation facilities; structures, if they exist, are widely scattered. For fire management purposes, the wildland is an area that has flammable natural fuels, such as leaf litter or logging slash.

wildlife and fish user-day (WFUD) - A unit of measure that represents one person hunting or viewing wildlife for a 12-hour period or fishing for a 4-hour period.

wildlife habitat diversity - The number and variety of habitat types present in an area and their spatial distribution.

wildlife-associated recreation - Recreation closely associated with one or more wildlife species. Wildlife-associated recreation is often divided into consumptive use or non-consumptive use of the resource (for example, hunting and fishing versus wildlife watching). See consumptive use and non-consumptive use.

windrowing - The concentration of logging slash and other woody material into rows to clear the ground, facilitating regeneration of a new forest. Such rows may be created by hand or machine. They may be burned or allowed to break down naturally and incorporate into the soil. See raking.

windthrow - One or more trees that have been uprooted by wind.

wooded grassland/shrubland - In this document, a very open, high canopy stand (less than 25% canopy cover) of trees with a low basal area (10-29 square feet/acre), with or without a well-developed shrub/grass/forb layer. These areas more or less fit Forest Inventory and Analysis's (FIA) definition of 'natural rangeland.' This condition has been called 'savanna', but the term is not used here to avoid confusion with the dry savannas of Africa or the coastal pine flats of the southeast.

woodland - In this document, an open, high canopy stand of trees with a low-to-moderate basal area (30-50 square feet/acre) in which the crowns are not usually touching (generally forming 25-60% cover). Forest Inventory and Analysis's (FIA) definition of woodland based on low productivity sites is not used in this document.

X

xeric - Refers to very dry soil conditions. Under xeric conditions, soil moisture is predictably inadequate for plant growth during the growing season.

Y

yarding - A term used in conjunction with cable logging operations, to describe the process of moving logs from stump to a landing.

yellow pine - In this document, refers to southern yellow pine, which is a group of ten *Pinus* species found in the southeastern United States. Three of these species, shortleaf pine, Virginia pine, and pitch pine commonly occur on the DBNF. Another of these species, loblolly pine, has been planted on the DBNF beyond its historic range.

Acronyms

A

AMS: Analysis of the management situation

ASQ: allowable sale quantity

ARPA: Archeological Resources Protection Act

ATV: All terrain vehicles

B

BA: basal area; Biological Assessment

BE: Biological Evaluation

BEA: Bureau of Economic Analysis

BF: board foot

BMP: Best Management Practices

BO: Biological Opinion

C

CBM: coal bed methane

ccf: hundred cubic feet

CE: categorical exclusion

CEQ: Council on Environmental Quality

cf: cubic feet

CFR: Code of Federal Regulations

CISC: Continuous Inventory of Stand Condition

CNH: Conifer northern hardwood forest

CSU: Controlled Surface Use

CWA: Clean Water Act

D

dbh: diameter at breast height

DBNF: Daniel Boone National Forest

DEIS: Draft Environmental Impact Statement

DFC: desired future condition

DG: Data General (computer system)

DMO: Dry mesic oak

DMPO: Dry mesic (yellow) pine/oak

DR: District Ranger

DXO: Dry xeric oak

DXPO: Dry xeric (yellow) pine/oak

E

EA: Environmental Assessment

EAM: even-aged management

EIS: Environmental Impact Statement

EMU: Ecological management unit

ESA: Endangered Species Act

F

FAI: forest area of influence

FDR: Forest Development Road

FEIS: Final Environmental Impact Statement

FFIS: Foundation Financial Information System

FIA: Forest Inventory and Analysis

FLRMP: Forest Land and Resource Management Plan

FMO: Fire Management Officer

FMP: Fire Management Plan

FMT: Forest management team

FOG: Future old-growth

FONSI: Finding of No Significant Impact

FS: Forest Service

G

GFA: general forest area

GIS: Geographic Information System

H

HMA: Habitat Management Area

HUC: Hydrologic Unit Code

I

I&DC: Insect and Disease Control

ID: interdisciplinary

IDT: interdisciplinary team

IMPLAN: Impact Analysis for Planning

INFRA: infrastructure

IPM: integrated pest management

K

KAR: Kentucky Administrative Regulations

KDAQ: Kentucky Division of Air Quality

KDF: Kentucky Division of Forestry

KDFWR: Kentucky Department of Fish and Wildlife Resources

KNREPC: Kentucky Natural Resources and Environmental Protection Cabinet

KRS: Kentucky Revised Statutes

KSNPC: Kentucky State Nature Preserves Commission

L

LAC: Limits of acceptable change

LBA: lease by application

LEIMARS: Law Enforcement Information and Reporting System

LEO: Law Enforcement Officer

LMP: Land Management Planning

LN: Lease Notice

LRMP: Land and Resource Management Plan

LT: Landtype

LTA: Landtype Association

LTP: Landtype Phase

M

MA: Management area

MAI: mean annual increment

M&E: monitoring and evaluation

MBF: thousand board feet

MCF: thousand cubic feet

MCFGPD: thousand cubic feet of gas per day

MIS: Management Indicator Species

MMBF: million board feet

MMCF: million cubic feet

MSDS: Material Safety Data Sheets

N

NAA: Not Administratively Available

NAAQS: National Ambient Air Quality Standard

NEPA: National Environmental Policy Act

NFMA: National Forest Management Act

NFSR: National Forest System roads

NHPA: National Historic Preservation Act

NO_x: Nitrogen oxide

NOI: Notice of Intent

NRIS: Natural Resource Inventory System

NSO: No-Surface-Occupancy

NTFP: Non-timber forest products

NTL: Notice to Lessees

NVUM: National Visitor Use Monitoring

O

OHV: off-highway vehicle

ORA: Other Resources Assistant (Ranger)

ORV: off-road vehicle; outstandingly remarkable values

OSM: Office of Surface Mining

P

PAO: Public Affairs Officer

PAOT: Persons-at-one-time

PET: Proposed, Endangered, and Threatened

PETS: Proposed, Endangered, Threatened, and Sensitive species

PIF: Partners-in-Flight

PILT: Payment in Lieu of Taxes

$PM_{2.5}$: Particulate matter <2.5 microns

PNF: prescribed natural fire

PNV: present net value

POG: Possible old-growth

R

RARE II: Roadless Area Review and Evaluation

RCPA: Riparian Corridor Prescription Area

RCW: Red-cockaded woodpecker

RD: Ranger District

RF: Regional Forester

RIM: Recreation Information Management

RNA: Research Natural Area

RO: Regional Office

ROD: Record of Decision

ROS: Recreation Opportunity Spectrum

ROW: Right-of-way

RPA: Resource Planning Act

RRGGA: Red River Gorge Geologic Area

RV: recreation vehicle

RVD: Recreation visitor day

S

SA: Southern Appalachian

SAA: Southern Appalachian Assessment

SCORP: State Comprehensive Outdoor Recreation Plan

SHPO: State Historic Preservation Officer

SIC: Standard Industrial Code

SIO: Scenic Integrity Objective

SMS: Scenery Management System

SMCRA: Surface Mining Control Reclamation Act

SO: Supervisor's Office

SO_2: sulfur dioxide

SPB: Southern pine beetle

SPM: Semi-primitive Motorized

SPNM: Semi-primitive Non-motorized

STARS: sale tracking and reporting system

SUA: special use authorization

SYP: Southern yellow pine

S&Gs: standards and guidelines

T

tcfg: trillion cubic feet of gas

TMA: Timber Management Assistant

TL: Timing Limitation Stipulation

TNC: The Nature Conservancy

TSI: timber stand improvement

TVA: Tennessee Valley Authority

U

UAM: uneven-aged management

USDA: United States Department of Agriculture

USDI: United States Department of Interior

USFS: United States Forest Service

USGS: U.S. Geological Service

USFWS: United States Fish and Wildlife Service

V

VMEIS: Vegetation Management Environmental Impact Statement

VOC: volatile organic compounds

VQO: visual quality objective

W

W&SR: Wild and Scenic River

WHI: Watershed Health Index

WO: Washington Office

WFUD: Wildlife and fish user-day

WPH: White pine/hemlock

Scientific Names for Common Names Used

Common Name	Scientific Name
Acadian flycatcher	*Empidonax virescens*
Agoyan cataract moss	*Scopelophila cataractae*
American basswood	*Tilia americana*
American beech	*Fagus grandifolia*
American chaffseed	*Schwalbea americana*
American chestnut	*Castanea dentata*
American elm	*Ulmus americana*
American redstart	*Setophaga ruticilla*
Ash	*Fraxinus sp.*
Ashy darter	*Etheostoma cinereum*
Aspen [quaking]	*Populus tremuloides*
Bald eagle	*Haliaeetus leucocephalus*
Basswood	*Tilia spp.*
Beaver	*Castor canadensis*
Beech [American]	*Fagus grandifolia*
Bitternut hickory	*Carya cordiformis*
Black bear	*Ursus americanus*
Black birch	*Betula lenta*
Blackgum	*Nyssa sylvatica*
Black locust	*Robinia pseudoacacia*
Black oak	*Quercus velutina*
Black racer	*Coluber constrictor constrictor*
Black walnut	*Juglans nigra*
Blackside Dace	*Phoxinus cumberlandensis*
Black-throated green warbler	*Dendroica virens*
Blue ash	*Fraxinus quadrangulata*
Box huckleberry	*Gaylusaccia brachycera*
Boxelder	*Acer negundo*
Butternut	*Juglans cinerea*
Buttonbush	*Cephalanthus occidentalis*
Cane	*Arundinaria gigantea*
Caric sedge	*Carex seorsa*
Catbrier	*Smilax glauca*
Cerulean warbler	*Dendroica cerulea*
Chestnut oak	*Quercus montana*
Chestnut-sided warbler	*Dendroica pensylvanica*
Chinquapin oak	*Quercus muehlenbergii*
Chipping sparrow	*Spizella passerina*
Cliff caddisfly	*Manophylax butleri*
Common yellowthroat	*Geothlypis trichas*
Corn snake	*Elaphe guttata guttata*
Coyote	*Canis latrans*
Cumberland bean pearlymussel	*Villosa trablis*
Cupped vertigo	*Vertigo clappi*
Darters	*Ammocrypta, Etheostoma and Percina spp.*

Common Name	Scientific Name
Diana fritillary	*Speyeria diana*
Eastern (Rufous-sided) towhee	*Pipilo erythrophthalmus*
Eastern [Canadian] hemlock	*Tsuga canadensis*
Eastern cottonwood	*Populus deltoides*
Eastern redcedar	*Juniperus virginiana*
Eastern slender glass lizard	*Ophisaurus attenuatus longicaudus*
Eastern small-footed bat	*Myotis leibii*
Elm	*Ulmus spp.*
Fescue	*Lolium (Festuca) elatior*
Field sparrow	*Spizella pusilla*
Fir	*Abies spp.*
French's shooting star	*Dodecatheon frenchii*
Ginger-leaved grass-of-Parnassis	*Parnassia arifolia*
Ginseng	*Panax quinquefolia*
Grass-pink	*Calopogon tuberosus*
Gray catbird	*Dumetella carolinensis*
Gray squirrel (eastern)	*Sciurus carolinensis*
Green ash	*Fraxinus pensylvanicus*
Greenbrier	*Smilax rotundifolia*
Hairy skullcap	*Scutellaria arguta*
Harris's goldenrod	*Solidago harrissii*
Hawk	*Accipter, Circus and Buteo spp.*
Hickory	*Carya spp.*
Horse	*Equus caballus*
Indiana bat	*Myotis sodalis*
Juniper sedge	*Carex juniperorum*
Little mountain meadowrue	*Thalictrum mirabile*
Littlewing pearlymussel	*Pegias fabula*
Liverwort	*Telaranea nematodes*
Louisiana water thrush	*Seiurus motacilla*
Mountain lover (Canby's)	*Paxistima canbyi*
Mountain pepperbush	*Clethra acuminata*
Muskellunge	*Esox masquinongy*
Nettleleaf noseburn	*Tragia urtifolia*
Northern bobwhite [quail]	*Colinus virginianus*
Northern cardinal	*Cardinalis cardinalis*
Oak	*Quercus spp.*
Ovenbird	*Seiurus aurocapillus*
Owl	*Aegolius, Asio, Bubo, Nyctea, Strix, and Tyto spp.*
Peregrine Falcon	*Falco peregrinus*
Pignut hickory	*Carya glabra*
Pine warbler	*Dendroica pinus*
Pitch pine	*Pinus rigida*
Pond caric sedge	*Carex joori*
Post oak	*Quercus stellata*
Prairie warbler	*Dendroica discolor*
Rafinesque's big-eared bat	*Corynorhinus rafinesquii rafinesquii*

Common Name	Scientific Name
Red hickory	*Carya ovalis*
Red maple	*Acer rubrum*
Red-cockaded woodpecker	*Picoides borealis*
Rhododendron	*Rhododendron maximum*
River birch	*Betula nigra*
Royal catchfly	*Silene regia*
Ruffed grouse	*Bonasa umbellus*
Sassafras	*Sassafras albidum*
Sawbrier	*Smilax rotundifolia*
Scarlet oak	*Quercus coccinea*
Sedge wren	*Cistothorus platensis*
Sericea [lespedeza]	*Lespedeza cuneata*
Shagbark hickory	*Carya ovata*
Sharp-shinned hawk	*Accipiter striatus*
Shellbark hickory	*Carya laciniosa*
Shingle oak	*Quercus imbricaria*
Shortleaf pine	*Pinus echinata*
Silver maple	*Acer saccharinum*
Slippery elm	*Ulmus rubra*
Smallmouth bass	*Micropterus dolomieu*
Snuffbox	*Epioblasma triquetra*
Sourwood	*Oxydendrum arboreum*
Southern pine beetle	*Dendroctonus frontalis*
Sphagnum (moss)	*Sphagnum spp.*
Spruce	*Picea spp.*
Sugar maple	*Acer saccharum*
Summer tanager	*Piranga rubra*
Swainson's warbler	*Limnothlypis swainsonii*
Sword moss	*Bryoxiphium norvegicum*
Sycamore	*Platanus occidentalis*
Trout	*Salmo salvelinus and Oncorhynchus spp.*
Uptight caric sedge	*Carex stricta*
Virginia big-eared bat	*Corynorhinus townsendii virginianus*
Virginia pine	*Pinus virginiana*
Walleye	*Stizostedion vitreum*
White ash	*Fraxinus americana*
White fringeless orchid	*Platanthera integrilabia*
White oak	*Quercus alba*
White pine [eastern]	*Pinus strobus*
White-haired goldenrod	*Solidago albopilosa*
White-tailed deer	*Odocoileus virginianus*
Wild turkey	*Meleagris gallopavo*
Yellow (sweet) buckeye	*Aesculus flavus (octandra)*
Yellow-poplar (Tuliptree)	*Liriodendron tulipifera*
Yellow-breasted chat	*Icteria virens*
Yucca-leaved rattlesnake master	*Eryngium yuccifolium*

Creek on Stearns Ranger District.

Appendix B

STATUTES, REGULATIONS, EXECUTIVE ORDERS AND DIRECTIVES

This Appendix contains a selected listing of relevant statutes, regulations, policies and executive orders applicable to the Daniel Boone National Forest. Web site locations where the text of the documents can be obtained are provided where available.

FEDERAL STATUTES

American Indian Religious Freedom Act of 1978

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=42&sec=1996

Protects and preserves for American Indians their inherent right of freedom to believe, express, and exercise the traditional religions of the American Indian, Eskimo, Aleut, and Native Hawaiians, including but not limited to access to sites, use and possession of sacred objects and the freedom to worship through ceremonial and traditional rites.

Americans with Disabilities Act of 1990

http://www.usdoj.gov/crt/ada/statute.html

Provides a clear and comprehensive national mandate for the elimination of discrimination against individuals with disabilities; for clear, strong, consistent, enforceable standards addressing discrimination against individuals with disabilities; to ensure that the federal government plays a central role in enforcing the standards established in this Act on behalf of individuals with disabilities; and to invoke the sweep of congressional authority, including the power to enforce the fourteenth amendment and to regulate commerce, to address the major areas of discrimination faced by people with disabilities.

Anderson-Mansfield Reforestation and Revegetation Act of 1949

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=16&sec=581j

Provides for the reforestation and revegetation of National Forest lands and other lands under the administration or control of the Forest Service.

Antiquities Act of 1906

http://www.cr.nps.gov/local-law/anti1906.htm

Prevents the appropriation, excavation, injury, or destruction of any historic or prehistoric ruin or monument, or any object of antiquity, situated on lands owned or controlled by the United States

without the permission of the Secretary of the Interior having jurisdiction over the lands on which said antiquities are situated; and authorizes the President to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon lands owned or controlled by the United States to be national monuments, and to reserve as a part thereof parcels of land needed for the proper care and management of the objects to be protected.

Archaeological Resources Protection Act of 1979, as amended 1988

http://www2.cr.nps.gov/laws/archprotect.htm

Enacted to secure the protection of archaeological resources and sites on public and Indian lands and to foster increased cooperation and exchange of information between governmental authorities, the professional archaeological community and private individuals having access to and information related to these resources.

Architectural Barriers Act of 1968

http://www4.law.cornell.edu/uscode/42/4151.html

Ensures that standards for the design, construction, and alteration of buildings owned, leased, or funded by the United States are prescribe to insure, wherever possible, that physically handicapped people have ready access to and use of such buildings.

Bankhead-Jones Farm Tenant Act of 1937

http://laws.fws.gov/lawsdigest/bankjon.html

Directed the Secretary of Agriculture to develop a program of land conservation and utilization to correct maladjustments in land use and thus assist in such things as control of soil erosion, reforestation, preservation of natural resources, and protection of fish and wildlife.

Clarke-McNary Act of 1924

http://www.senate.gov/~agriculture/Legislation/Agricultural%20Law/Forests/cma.pdf

Authorizes and directs the Secretary of Agriculture, in cooperation with land grant colleges and universities or with other suitable state agencies, to aid farmers through advice, education, demonstrations, or other similar means in establishing, renewing, protecting, and managing wood lots, shelter belts, windbreakers, and other valuable forest growth, and in harvesting, utilizing, and marketing the products thereof. The Act also authorizes the Secretary to accept, on behalf of the United States, title to any land donated by private land owners to assure future timber supplies or for other national forest purposes.

Clean Air Act of 1977, as amended (1977 and 1990)

http://www4.law.cornell.edu/uscode/unframed/42/ch85.html

Enacted to protect and enhance the quality of the Nation's air resources; to initiate and accelerate a national research and development program to achieve the prevention and control of air pollution; to provide technical and financial assistance to state and local governments in connection with the

development and execution of their air pollution prevention and control programs; and, to encourage and assist the development and operation of regional air pollution prevention and control programs.

Color of Title Act of 1928

http://www4.law.cornell.edu/uscode/43/ch25A.html

Granted the Secretary of the Interior the authority to issue patents up to 160 acres to claimants that had held a tract of public land in good faith and in peaceful, adverse possession and had made valuable improvements on the land or reduced it to cultivation. The Act reserved the rights to coal and all other minerals contained therein to the United States.

Common Varieties of Mineral Materials Act of 1947

http://www4.law.cornell.edu/uscode/30/601.html

Authorizes the Secretaries of the Interior and Agriculture, under such rules and regulations as they may prescribe, to dispose of mineral materials (including but not limited to common varieties sand, stone, gravel, pumice, pumicite, cinders, and clay) and vegetative materials (including but not limited to yucca, manzanita, mesquite, cactus, and timber or other forest products) on public lands of the United States, if the disposal of such materials is not otherwise expressly authorized by law, is not expressly prohibited by laws of the United States, and would not be detrimental to the public interest.

Comprehensive Environmental Response, Compensation and Liability Act of 1980 (42 U.S.C.A. 9601 et seq.) as amended in 1986

http://www4.law.cornell.edu/uscode/42/ch103.html

http://uscode.house.gov/DOWNLOAD/42C103.DOC

Enables the Environmental Protection Agency (EPA) and other federal agencies to respond to the release or to the threatened release of hazardous substances. CERCLA stands for Comprehensive Environmental Response, Compensation and Liability Act (42 U.S.C.A. 9601 et seq.). It is a law enacted in 1980 and amended in 1986 that enables the Environmental Protection Agency (EPA) and other federal agencies to respond to the release or to the threatened release of hazardous substances.

Cooperative Forestry Assistance Act of 1978

http://www4.law.cornell.edu/uscode/16/2101.html

Authorizes the Secretary of Agriculture to assist in the establishment of a coordinated and cooperative federal, state, and local forest stewardship program for the management of non-federal Forest lands and forest lands in foreign countries.

Disaster Relief Act of 1974

http://www4.law.cornell.edu/uscode/42/ch68.html

Provides an orderly and continuing means of assistance by the federal government to state and local governments in developing, coordinating, and carrying out their disaster relief programs, and provides federal assistance programs for both public and private losses sustained in disasters.

Eastern Wilderness Act of 1975

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=16&sec=1132

Established Wilderness areas in the eastern United States, proposed several more for Wilderness Study, and authorized the Secretary of Agriculture to acquire, through purchase, by gift, exchange, condemnation, or otherwise such lands, waters, or interests therein as determined necessary or desirable for the purposes of the Act.

Economy Act of 1932

http://www4.law.cornell.edu/uscode/31/1535.html

Authorizes the head of a federal agency or major organizational unit within an agency to obtain goods or services from a major organizational unit within the same agency or another agency if amounts are available; if it is determined to be in the best interest of the United States government; the agency or unit is able to provide or get by contract the ordered goods or services; and the head of the agency decides ordered goods or services cannot be provided as conveniently or cheaply by a commercial enterprise.

Emergency Flood Prevention (Agricultural Credit Act) Act of 1978

http://www4.law.cornell.edu/uscode/16/2201.html

Authorizes the Secretary of Agriculture to undertake emergency measures for runoff retardation and soil-erosion prevention, in cooperation with land owners and users, as the Secretary deems necessary to safeguard lives and property from floods, drought, and the products of erosion on any watershed whenever fire, flood, or other natural occurrence is causing or has caused a sudden impairment of that watershed.

Endangered Species Act of 1973

http://laws.fws.gov/lawsdigest/esact.html

http://www4.law.cornell.edu/uscode/16/ch35.html

Authorizes the determination and listing of species as endangered and threatened; prohibits unauthorized taking, possession, sale, and transport of endangered species; provides authority to acquire land for the conservation of listed species, using Land and Water Conservation Funds; authorizes establishment of cooperative agreements and grants-in-aid to states that establish and maintain programs for endangered and threatened wildlife and plants; authorizes the assessment of civil and criminal penalties for violating the Act or regulations; and, authorizes the payment of rewards to anyone furnishing information leading to arrest and conviction for any violation of the Act or any regulation issued there under. Section 7 of the Act requires federal agencies to insure that any action authorized, funded or carried out by them is not likely to jeopardize the continued existence of listed species or modify their critical habitat.

Energy Security Act of 1980

http://thomas.loc.gov/cgi-bin/bdquery/z?d096:SN00932:@@@L|TOM:/bss/d096query.html|

Authorizes the Secretary of Agriculture to make available timber resources of the National Forest System, in accordance with appropriate timber appraisal and sale procedures, for use by biomass energy projects.

Federal Advisory Committee Act of 1972

http://www.nara.gov/fedreg/legal/index.html#faca

Sets standards and uniform procedures to govern the establishment, operation, administration, and duration of advisory committees.

Federal Cave Resources Protection Act of 1988

http://laws.fws.gov/lawsdigest/caveres.html

Established requirements for the management and protection of caves and their resources on federal lands, including allowing land managing agencies to withhold the location of caves from the public, and requiring permits for any removal or collecting activities in caves on federal lands.

Federal Coal Leasing Amendments Act of August 4, 1976

http://thomas.loc.gov/cgi-bin/bdquery/z?d094:SN00391:@@@L|TOM:/bss/d094query.html|

Authorizes the Secretary of the Interior to divide lands, subject to the Mineral Lands Leasing Act, which have been classified for coal leasing into tracts of such size as he finds appropriate and in the public interest and which can be economically extracted, and, in his discretion, upon the request of any qualified applicant or on his own motion, from time to time offer such lands for leasing by competitive bid.

Federal Insecticide, Rodenticide, and Fungicide Act of October 21, 1972

http://www4.law.cornell.edu/uscode/unframed/7/ch6.html

Requires the Administrator of the Environmental Protection Agency to prescribe standards for the certification of individuals authorized to use or supervise the use of any pesticide that is classified for restricted use; regulates the sale of restricted use pesticides; and provides penalties for the unauthorized use or sale of restricted use pesticides.

Federal Land Policy and Management Act of October 21, 1976

http://www4.law.cornell.edu/uscode/unframed/43/ch35.html

Requires that public lands be managed in a manner that will protect the quality of scientific, scenic, historical, ecological, environmental, air and atmospheric, water resource, and archeological values; that, where appropriate, will preserve and protect certain public lands in their natural condition; that will provide food and habitat for fish and wildlife and domestic animals; and that will provide for outdoor recreation and human occupancy and use. Also states that the United States shall receive fair market value of the use of the public lands and their resources unless otherwise provided for by law.

Federal Noxious Weed Act of January 3, 1975

http://laws.fws.gov/lawsdigest/fednox.html

Authorizes the Secretary of Agriculture to designate plants as noxious weeds by regulation; to prohibit the movement of all such weeds in interstate or foreign commerce except under permit; to inspect, seize and destroy products, and to quarantine areas, if necessary to prevent the spread of such weeds; and to cooperate with other federal, state and local agencies, farmers associations, and private individuals in measures to control, eradicate, prevent, or retard the spread of such weeds.

Federal Onshore Oil and Gas Leasing reform Act of 1987 (FOOGLRA)

http://www.fs.fed.us/r9/gmfl/Oil_Gas/FLNF_Oil_and_Gas_ROD.pdf

Expands the authority of the Secretary of Agriculture in the management of oil and gas resources on NFS lands and directed the Secretary to issue rules on bonding and reclamation efforts. Under FOOGLRA, leases for oil and gas on NFS lands cannot be issued by BLM without the approval of the USFS.

Federal Power Act of June 10, 1920

http://laws.fws.gov/lawsdigest/fedpowr.html

Provides for cooperation between the Federal Energy Regulatory Commission and other federal agencies, including resource agencies, in licensing and relicensing power projects.

Federal-State Cooperation for Soil Conservation Act of December 22, 1944

http://www4.law.cornell.edu/uscode/33/701-1.html

Authorized the adoption of eleven watershed improvement programs in various states for the improvement of water runoff, water flow retardation, and soil erosion prevention.

Federal Water Pollution Control Act and Amendments of 1972 (Clean Water Act)

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=33&sec=1251

Enacted to restore and maintain the chemical, physical, and ecological integrity of the Nation's waters. Provides for measures to prevent, reduce, and eliminate water pollution; recognizes, preserves, and protects the responsibilities and rights of states to prevent, reduce, and eliminate pollution, and to plan the development and use (including restoration, preservation, and enhancement) of land and water resources; and provides for federal support and aid of research relating to the prevention, reduction, and elimination of pollution, and federal technical services and financial aid to state and interstate agencies and municipalities for the prevention, reduction, and elimination of pollution.

Established goals for the elimination of water pollution; required all municipal and industrial wastewater to be treated before being discharged into waterways; increased federal assistance for municipal treatment plant construction; strengthened and streamlined enforcement policies; and expanded the federal role while retaining the responsibility of states for day-to-day implementation of the law (401 KAR Chapters 4, 5, 6, & 8).

Federal Water Project Recreation Act of July 9, 1965

http://laws.fws.gov/lawsdigest/fwatrre.html

http://www4.law.cornell.edu/uscode/unframed/16/460l-12.html

Requires that recreation and fish and wildlife enhancement opportunities be considered in the planning and development of federal water development.

Fish and Wildlife Conservation Act of September 15, 1960

http://www4.law.cornell.edu/uscode/unframed/16/670a.html

Requires the Secretaries of the Interior and Agriculture, in cooperation with state agencies, to plan, develop, maintain, and coordinate programs for the conservation and rehabilitation of wildlife, fish, and game on public lands under their jurisdiction.

Fish and Wildlife Coordination Act of March 10, 1934

http://laws.fws.gov/lawsdigest/fwcoord.html

Authorizes the Secretaries of Agriculture and Commerce to provide assistance to and cooperate with other federal and state agencies to protect, rear, stock, and increase the supply of game and fur-bearing animals, as well as to study the effects of domestic sewage, trade wastes, and other polluting substances on wildlife. The Act also authorizes the preparation of plans to protect wildlife resources, the completion of wildlife surveys on public lands, and the acceptance by federal agencies of funds or lands for related purposes provided that land donations receive the consent of the state in which they are located.

Forest Highways Act of August 27, 1958

http://www4.law.cornell.edu/uscode/unframed/23/205.html

Requires that funds available for forest development roads and trails be used by the Secretary of Agriculture to pay for the costs of construction and maintenance thereof, including roads and trails on experimental and other areas under Forest Service administration, or for adjacent vehicular parking areas and sanitary, water, and fire control facilities. Authorizes the Secretary of Agriculture to enter into contracts with a state or civil subdivision thereof, and issue such regulations, as he deems desirable.

Forest and Rangeland Renewable Resources Planning Act of August 17, 1974

http://www4.law.cornell.edu/uscode/16/ch36.html

Directs the Secretary of Agriculture to prepare a Renewable Resource Assessment every ten years; to transmit a recommended Renewable Resources Program to the President every five years; to develop, maintain, and, as appropriate, revise land and resource management plans for units of the National Forest System; and to ensure that the development and administration of the resources of the National Forest System are in full accord with the concepts of multiple use and sustained yield.

Freedom of Information Act of November 21, 1974

http://www4.law.cornell.edu/uscode/unframed/5/ch5.html

Governs which government records are released to the public either automatically or upon request.

Geothermal Steam Act of December 24, 1970

http://www4.law.cornell.edu/uscode/30/1001.html

Authorizes the Secretary of the Interior to issue leases for the development and utilization of geothermal steam and associated geothermal resources in any lands administered by him or by the Department of Agriculture, and to prescribe such rules and regulations, as he deems appropriate to carry out the provisions of the Act.

Granger-Thye Act of April 24, 1950

http://www4.law.cornell.edu/uscode/16/581i-1.html

Authorizes the Forest Service to spend appropriated funds on buildings, lookout towers, and other structures on lands owned by states, counties, municipalities, or other political subdivisions, corporations, or individuals; to procure and operate aerial facilities and services for the protection of National Forests; to cooperate with and assist public and private agencies, organizations, institutions, and individuals in performing work on non-Forest land for the administration, protection, improvement, reforestation, and other kinds of work as the Forest Service is authorized to do on Forest land; to deposit sums from timber purchases to cover the costs of disposing of brush and debris; to permit the use of structures under its control; to sell nursery stock; and other purposes.

Historic Sites Act of 1935

http://www4.law.cornell.edu/uscode/16/461.html

Establishes a policy to preserve for public use historic sites, buildings, and objects of national significance for the benefit of the people.

Joint Surveys of Watershed Areas Act of September 5, 1962

http://www4.law.cornell.edu/uscode/16/1009.html

Authorizes and directs the Secretaries of the Army and Agriculture to make joint investigations and surveys of watershed areas in the United States, Puerto Rico, and the Virgin Islands, and to prepare joint reports setting forth their recommendations for improvements needed for flood prevention, for the conservation, development, utilization, and disposal of water, and for flood control.

Kentucky Wilderness Act of 1985

Establishes the Clifty Wilderness and authorizes the Secretary of Agriculture to administer as component of the National Wilderness Preservation System.

Knutson-Vandenberg Act of June 9, 1930

http://www4.law.cornell.edu/uscode/16/576.html

Authorizes the Secretary of Agriculture to establish forest tree nurseries; to deposit monies from timber sale purchasers to cover the costs of planting young trees, sowing seed, removing undesirable trees or other growth, and protecting and improving the future productivity of the land; and to furnish seedlings and/or young trees for the replanting of burned-over areas in any National Forest.

Land Acquisition Act of March 3, 1925

http://www.wildrockies.org/appeals/68-575.htm

Authorizes the Secretary of Agriculture to purchase land for National Forest headquarters, Ranger Stations, dwellings, or other sites required for the effective performance of the authorized activities of the Forest Service.

Land Acquisition-Declaration of Taking Act of February 26, 1931

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title-40&sec=258a

Provides for the immediate transfer of land to the United States and for just compensation for such lands.

Land Acquisition – Title Adjustment Act of July 8, 1943

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=7&sec=2253

Authorizes the Secretary of Agriculture to execute and deliver title adjustments if, after the acquisition of the land, the title thereto is legally insufficient for the purposes for which the land was acquired or if the land was acquired through mistake, misunderstanding, error, or inadvertence.

Land and Water Conservation Fund Act of September 3, 1964

http://www4.law.cornell.edu/uscode/16/460l-4.html http://classweb.gmu.edu/jkozlows/lwcfregs.htm

Authorizes the appropriation of funds for federal assistance to states in planning, acquisition, and development of needed land and water areas and facilities and for the federal acquisition and development of certain lands and other areas for the purposes of preserving, developing, and assuring accessibility to outdoor recreation resources.

Law Enforcement Authority Act of March 3, 1905

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=16&sce=559

Authorizes all Forest Service employees to make arrests for the violation of the laws and regulations relating to the national forests.

Leases Around Reservoirs Act of March 3, 1962

http://www4.law.cornell.edu/uscode/16/460d-2.html

Authorizes the Secretary of Agriculture to amend any lease with respect to lands under the jurisdiction of the Forest Service providing for the construction, maintenance, and operation of commercial recreational facilities at a federal reservoir project so as to provide for the adjustment of the amount of rental or other consideration payable to the United States under such lease.

Migratory Bird Treaty Act, of November 19, 1976 - 16 USC 703-712

http://www4.law.cornell.edu/uscode/16/703.html

Prohibits "by any means or in any manner, to pursue, hunt, take, capture, kill, attempt to take, capture, or kill, possess, offer for sale, sell, offer to barter, barter, offer to purchase, purchase, deliver for shipment, ship, export, import, cause to be shipped, exported, or imported, deliver for transportation, transport or cause to be transported, carry or cause to be carried, or receive for shipment, transportation, carriage, or export, any migratory bird, any part, nest, or eggs of any such bird, or any product, whether or not manufactured, which consists, or is composed in whole or part, of any such bird or any part, nest, or egg thereof…" On July 18, 2000, the United States Court of Appeals for the District of Columbia ruled that Federal agencies are subject to the provisions of the Migratory Bird Treaty Act (MBTA). The U.S. Fish and Wildlife Service (FWS) now consider the prohibitions of the MBTA to apply equally to Federal and non-federal entities.

Mineral Leasing Act of February 25, 1920

http://ipl.unm.edu/cwl/fedbook/minerall.html

Provides that the deposits of certain minerals on land owned by the United States shall be subject to lease to citizens of the United States, provided royalties on such deposits are paid to the United States.

Mineral Leasing Act for Acquired Lands Act of August 7, 1947

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=30&sec=351

Extended the provisions of the "mineral leasing laws" to those lands previously acquired by the United States for which they had not been extended, and lands thereafter acquired by the United States.

Mineral Resources on Weeks Law Lands Act of March 4, 1917

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=16&sec=520

Authorizes the Secretary of Agriculture to permit the prospecting, development, and utilization of the mineral resources of the lands acquired under the Weeks Law.

Mineral Springs Leasing Act of February 28, 1899

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=16&sec=495

Authorizes the Secretary of Agriculture to rent or lease to responsible persons suitable spaces and portions of ground near, or adjacent to, mineral, medicinal, or other springs within any National Forest where the public is accustomed to or desires to frequent for health or pleasure.

Mining Claims Rights Restoration Act of August 11, 1955

http://www4.law.cornell.edu/uscode/30/621.html

States that all public lands belonging to the United States which have been withdrawn or reserved for power development or power sites shall be open to entry for location and patent of mining claims and mineral development, subject to certain conditions.

Mining and Minerals Policy Act of December 31, 1970

http://www4.law.cornell.edu/uscode/30/21a.html

States that it is the policy of the federal government to foster and encourage the development of economically sound and stable domestic mining, minerals, metal, and mineral reclamation industries; the orderly and economic development of domestic mineral resources, reserves, and reclamation of metals and minerals to help assure satisfaction of industrial, security, and environmental needs; mining, mineral, and metallurgical research to promote the wise and efficient use of our natural and reclaimable mineral resources; and the study and development of methods for the disposal, control, and reclamation of mineral waste products and the reclamation of mined land.

Multiple-Use Sustained-Yield Act of June 12, 1960

http://ipl.unm.edu/cwl/fedbook/multiu.html

States that it is the policy of Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes, and authorizes and directs the Secretary of Agriculture to develop and administer the renewable surface resources of the national forests for the multiple use and sustained yield of the products and services obtained there from.

National Energy Conservation Policy Act of 2001

http://www4.law.cornell.edu/uscode/42/ch91.html

This statute provides for the regulation of interstate commerce, to reduce the growth in demand for energy in the United States, and to conserve nonrenewable energy resources produced in this Nation and elsewhere, without inhibiting beneficial economic growth.

National Environmental Education Act of November 16, 1970

http://ipl.unm.edu/cwl/fedbook/natened.html

Enacted to establish and support a program of environmental education for students and personnel working with students in schools, institutions of higher education, and related educational facilities, and to encourage postsecondary students to pursue careers related to the environment.

National Environmental Policy Act of January 1, 1970

http://es.epa.gov/oeca/ofa/nepa.html

Directs all federal agencies to consider and report the potential environmental impacts of proposed federal actions, and established the Council on Environmental Quality.

National 1990 Farm Bill (title XII – Forest Stewardship Act) Act of November 28, 1990

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=16&sec=582a

Directs the Secretary of Agriculture to establish a competitive forestry, natural resources, and environmental grants program, and provides for other research programs**.**

National Forest Management Act of October 22, 1976

http://ipl.unm.edu/cwl/fedbook/nfma.html

The National Forest Management Act reorganized, expanded and otherwise amended the Forest and Rangeland Renewable Resources Planning Act of 1974, which called for the management of renewable resources on National Forest lands. The National Forest Management Act requires the Secretary of Agriculture to assess forest lands, develop a management program based on multiple-use, sustained-yield principles, and implement a resource management plan for each unit of the National Forest System. It is the primary statute governing the administration of National Forests.

National Forest Roads and Trails Act of October 13, 1964

http://www.house.gov/resources/105cong/reports/105_a/roads_.pdf

Authorizes the Secretary of Agriculture to provide for the acquisition, construction, and maintenance of forest development roads within and near the National Forests through the use of appropriated funds, deposits from timber sale purchasers, cooperative financing with other public agencies, or a combination of these methods. The Act also authorizes the Secretary to grant rights-of-way and easements over national forest lands.

National Historic Preservation Act of December 12, 1966 as amended

http://www2.cr.nps.gov/laws/NHPA1966.html

Authorized the federal government to accelerate its historic preservation programs and activities; to give maximum encouragement to agencies and individuals undertaking preservation by private means; and to assist state and local governments and the National Trust for Historic Preservation in the United States to expand and accelerate their historic preservation programs and activities.

National Trails System Act of October 2, 1968

http://ipl.unm.edu/cwl/fedbook/nattrail.html

Established a national system of recreation, scenic, and historic trails by designating the initial components of the system and prescribing the methods and standards through which additional components may be added.

Native American Graves Protection and Repatriation Act of November 16, 1990

http://www4.law.cornell.edu/uscode/25/3001.html

Directs that the ownership and control of Native American human remains and objects shall be given to the ancestors of the Native American or to the appropriate Native American tribe.

Occupancy Permits Act of March 4, 1915

http://www.wy.blm.gov/Information/fai/wynf.0001(99).pdf

http://www.wildrockies.org/appeals/63-293.htm

Authorizes the Secretary of Agriculture to permit, under such regulations as he may prescribe, the use and occupancy of suitable areas of land within the National Forests for the purpose of constructing or maintaining hotels, resorts, or other structures necessary or desirable for recreation, public convenience, or safety; to permit the use and occupancy of suitable land for the purpose of constructing or maintaining summer homes; to permit the use and occupancy of suitable land for the purpose of constructing or maintaining buildings, structures, and facilities for industrial or commercial purposes when such use is consistent with other uses of the National Forest; and to permit any state or political subdivision thereof to use or occupy suitable land for the purpose of constructing or maintaining buildings, structures, or facilities necessary or desirable for education or for any other public use or in connection with any other public activity.

Oil and Gas Leasing Reform Act of 1987

http://thomas.loc.gov/cgi-bin/bdquery/z?d100:HR03545:@@@D|TOM:/bss/d100query.html

Amended the Mineral Lands Leasing Act of 1920 regarding competitive leasing of oil and gas for onshore federal lands. Sets forth guidelines for the promulgation of regulations regarding lease sales, and prohibits the issuance of oil or gas leases upon certain lands allocated or designated as Wilderness areas.

Organic Administration Act of June 4, 1897

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=16&sec=473

Authorizes the President to modify or revoke any instrument creating a National Forest; states that no National Forest may be established except to improve and protect the forest within its boundaries, for the purpose of securing favorable conditions of water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States. Authorizes the Secretary of Agriculture to promulgate rules and regulations to regulate the use and occupancy of the National Forests.

Pipelines Act of February 25, 1920

http://www4.law.cornell.edu/uscode/30/185.html

Authorizes the Secretary of the Interior or appropriate agency head to grant rights-of-way through any federal lands for pipeline purposes for the transportation of oil, natural gas, synthetic liquid or gaseous fuels, or any refined product produced there from to any applicant possessing the qualifications provided in the Act.

Preservation of Historical and Archaeological Data Act of May 24, 1974

http://www2.cr.nps.gov/laws/archpreserv.htm

Authorizes the Secretary of the Interior to undertake the recovery, protection, and preservation of significant scientific, prehistorically, historical, or archeological data whenever any federal agency finds or is notified that activities in connection with any federal construction project or federally licensed project, activity, or program may cause irreparable loss or destruction of such data.

Public Buildings Cooperative Use Act of 1976

http://caselaw.lp.findlaw.com/casecode/uscodes/40/chapters/12/sections/section_601a.html

Authorizes the federal government to acquire and utilize space in suitable buildings of historic, architectural, or cultural significance, unless use of such space would not prove feasible and prudent compared with available alternatives; to encourage the location of commercial, cultural, educational, and recreational facilities and activities within public buildings; to provide and maintain space, facilities, and activities, to the extent practicable, which encourages public access to and stimulates public pedestrian traffic around, into, and through public buildings, permitting cooperative improvements to and uses of the area between the building and the street, so that such activities complement and supplement commercial, cultural, educational, and recreational resources in the neighborhood of public buildings; and to encourage the public use of public buildings for cultural, educational, and recreational activities.

Public Land Surveys Act of March 3, 1899

http://www4.law.cornell.edu/uscode/16/488.text.html

http://www.lib.duke.edu/forest/usfscoll/092-097.htm

Provides that all standard, meander, township, and section lines of the public land surveys shall be established under the direction and supervision of the Commissioner of the General Land Office, whether the lands to be surveyed are within or without reservations, except that where the exterior boundaries of public forest reservations are required to be coincident with standard, township, or section lines, such boundaries may, if not previously established in the ordinary course of the public land surveys, be established and marked under the supervision of the Director of the United States Geological survey. This act made the surveying of forest-reserve lands identical, in all but the establishment of boundaries, with that of the public domain.

Public Rangelands Improvement Act of October 25, 1978

http://caselaw.lp.findlaw.com/casecode/uscodes/43/chapters/37/sections/section_1901.html

Establishes and reaffirms the national policy and commitment to inventory and identify current public rangeland conditions and trends; manage, maintain and improve the condition of public rangelands so that they become as productive as feasible for all rangeland values in accordance with management objectives and the land use planning process; charge a fee for public grazing use which is equitable; continue the policy of protecting wild free-roaming horses and burros from capture, branding, harassment, or death, while at the same time facilitating the removal and disposal of excess wild free-roaming horses and burros which pose a threat to themselves and their habitat and to other rangeland values.

Rehabilitation Act of 1973, as amended

http://caselaw.lp.findlaw.com/casecode/uscodes/29/chapters/16/miscs/0/sections/section_701.html

States that it is national policy that the federal government plays a leadership role in promoting the employment of individuals with disabilities, and in assisting states and providers of services in fulfilling the aspirations of such individuals with disabilities for meaningful and gainful employment and independent living.

Renewable Resources Extension Act of June 30, 1978

http://caselaw.lp.findlaw.com/casecode/uscodes/16/chapters/36/subchapters/iii/sections/section_1671.html

Authorizes and directs the Secretary of Agriculture, in cooperation with the state Directors of the Cooperative Extension Service programs, to provide educational programs relating to forest and rangeland renewable resources.

Reorganization Plan Numbered 3 of 1946

http://www.access.gpo.gov/uscode/title5a/5a_4_8_1_.html

Creates the Environmental Protection Agency (EPA), abolishes the Federal Water Quality Administration under the Department of the Interior, and transfers those functions to the EPA.

Research Grants Act of September 6, 1958

http://laws.fws.gov/lawsdigest/researc.html

Authorizes the Secretary of the Interior to enter into contracts with educational institutions, public or private agencies or organizations, or persons to conduct scientific or technological research.

Resource Conservation and Recovery Act (RCRA) of 1976

http://www.epa.gov/epaoswer/general/orientat/romexsum.pdf

Addresses the huge volumes of municipal and industrial solid waste generated nationwide. After several amendments, the Act as it stands today governs the management of solid and hazardous waste and underground storage tanks.

Right of Eminent Domain Act of August 1, 1888

http://caselaw.lp.finlaw.com/scripts/ts_search.pl?title=40&sec=257

Grants the Secretary of the Treasury or any other officer of the government who has been authorized to procure real estate for the erection of a building or for other public uses the authority to acquire such real estate by condemnation, provided such acquisition is otherwise authorized by statute.

Rural Development Act of August 30, 1972

http://www.reeusda.gov/1700/legis/ruraldev.htm

Enacted to provide multi-state regional agencies, states, counties, cities, multi-county planning and development districts, businesses, industries, Indian tribes on federal and state reservations or other federally recognized Indian tribal groups and others involved with public services and investments in rural areas or that provide or may provide employment in these areas the best available scientific, technical, economic, organizational, environmental, and management information and knowledge useful to them, and to assist and encourage them in the interpretation and application of this information to practical problems and needs in rural development.

Safe Drinking Water Amendments of November 18, 1977

http://thomas.loc.gov/cgi-bin/bdquery/z?d095:SN01528:|TOM:/bss/d095query.html|

Amended the Safe Drinking Water Act to authorize appropriations for research conducted by the Environmental Protection Agency relating to safe drinking water; federal grants to states for public water system supervision programs and underground water source protection programs; and grants to assist special studies relating to the provision of a safe supply of drinking water.

Secure Rural Schools and Community Self-Determination Act of 2000

http://www.fs.fed.us/r10/payments/

Through this law the Forest Service gives rural communities the means to build and improve schools, provide road maintenance, emergency services, and conservation programs for their citizens. Thus, communities are no longer dependent on federal timber sales from national forests to improve local schools and roads.

Sikes Act of October 18, 1974

http://laws.fws.gov/lawsdigest/sikes.html

http://www4.law.cornell.edu/uscode/16/670a.html

Provides for cooperation between the Secretary of Defense and the Secretary of the Interior to provide for conservation and rehabilitation of natural resources on military installations.

Small Tracts Act of January 22, 1983

http://www4.law.cornell.edu/uscode/16/521e.html

Authorizes the Secretary of Agriculture to sell, exchange, or interchange by quitclaim deed all right, title and interest, including the mineral estate, of the United States in and to certain lands within the National Forest when he determines it to be in the public interest.

Smokey Bear Act of May 23, 1952

http://caselaw.lp.findlaw.com/casecode/uscodes/18/parts/i/chapters/33/sections/section_711.html

Prohibits the unauthorized use of the “Smokey Bear” character or name.

Soil and Water Resources Conservation Act of November 18, 1977

http://ipl.unm.edu/cwl/fedbook/soilwate.html

Provides for a continuing appraisal of the United State's soil, water and related resources, including fish and wildlife habitats, and a soil and water conservation program to assist landowners and land users in furthering soil and water conservation.

Solid Waste Disposal (Resource Conservation & Recovery Act) Act of October 21, 1976

http://www4.law.cornell.edu/uscode/42/6901.html

Promotes the protection of health and the environment and the conservation of valuable material and energy resources by providing technical and financial assistance to state and local governments and interstate agencies for the improvement of solid waste management techniques.

Supplemental National Forest Reforestation Fund Act of September 18, 1972

http://www4.law.cornell.edu/uscode/16/576c.html

Directs the Secretary of Agriculture to establish a supplemental national reforestation fund, and states that money transferred to this fund shall be available to the Secretary for the purpose of supplementing programs of tree planting and seeding on National Forest lands determined by the Secretary to be in need of reforestation.

Surface Mining Control and Reclamation Act of August 3, 1977

http://caselaw.lp.findlaw.com/casecode/uscodes/30/chapters/25/subchapters/i/sections/section_1201.html

Authorizes the Secretary of Agriculture to enter into agreements with landowners, providing for land stabilization, erosion, and sediment control, and reclamation through conservation treatment, including measures for the conservation and development of soil, water, woodland, wildlife, and recreation resources, and agricultural productivity of such lands.

Sustained Yield Forest Management Act of March 29, 1944

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=16&sec=583

Authorizes the Secretaries of Agriculture and the Interior to establish by formal declaration cooperative sustained-yield units which shall consist of federally owned or administered forest land under their jurisdiction and, in addition thereto, land which reasonably may be expected to be made the subject of one or more of the cooperative agreements with private landowners authorized by Section 2 of the Act in order to promote the stability of forest industries, of employment, of communities, and of taxable forest wealth through continuous supplies of timber and forest products; and in order to secure the benefits of forests in the maintenance of water supply, regulation of stream flow, prevention of soil erosion, amelioration of climate, and preservation of wildlife.

Timber Export Act of March 4, 1917

http://www.fs.fed.us/r10/chugach/revision/pdfs/timber_export_act.pdf

Permits the Secretary of Agriculture to allow timber or other forest products to be cut or removed from a national forest and exported from the state or territory in which that national forest is situated.

Timber Exportation Act of April 12, 1926

http://www4.law.cornell.edu/uscode/16/617.html

Authorizes the exportation of lawfully cut timber from the state or territory where grown if the supply of timber for local use will not be endangered, and authorizes the Secretary to issue rules and regulations to carry out the provisions of the Act.

Title Adjustment Act of April 28, 1930

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=43&sec=872

Authorizes the Secretaries of the Interior and Agriculture to execute a quitclaim deed where an application for a conveyance of land has been withdrawn or rejected.

Toxic Substances Control Act of October 11, 1976

http://caselaw.lp.findlaw.com/casecode/uscodes/15/chapters/53/subchapters/i/sections/section_2601.html

Grants the Administrator of the Environmental Protection Agency the authority to regulate chemical substances and mixtures, which present an unreasonable risk of injury to the public health or the environment, and to take action with respect to chemical substances and mixtures, which are imminent hazards.

Transfer Act of February 1, 1905

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=16&sec=472

Transferred the management and control of the Forest Reserves from the General Land Office (GLO) in the Department of the Interior to the Bureau of Forestry in the Department of Agriculture.

Twenty-Five Percent Fund Act of May 23, 1908

http://www.wildrockies.org/appeals/60-136.htm

Provides that twenty-five percent of all monies received from the sale of timber or other forest products shall be paid to the state in which such forest is located to be expended as the state may prescribe for the benefit of public schools and roads.

Uniform Federal Accessibility Standards U.S. Criminal Code (18 USC Chapter 91 – Public Lands) Act of June 25, 1948

http://www.wildrockies.org/appeals/80-772.htm

http://caselaw.lp.findlaw.com/casecode/uscodes/18/parts/i/chapters/91/toc.html

Defines the crimes and criminal procedure for crimes committed against public lands.

U.S. Mining Laws (Public Domain Lands) Act of May 10, 1872 - 30 USC 22, 28, 28b

http://www4.law.cornell.edu/uscode/30/22.html

Provides that all valuable mineral deposits in lands belonging to the United States, both surveyed and unsurveyed, are free and open to exploration and purchase, and the lands in which they are found to occupation and purchase by citizens of the United States and those who have declared their intention to become such, under regulations prescribed by law, and according to the local customs or rules of miners, so far as the same are applicable and not inconsistent with the laws of the United States. There are a number of Acts which modify the mining laws as applied to local areas by prohibiting entry altogether or by limiting or restricting the use which may be made of the surface and the right, title, or interest which may pass through patent.

Volunteers in the National Forests Act of May 18, 1972

http://www4.law.cornell.edu/uscode/16/558a.html

Authorizes the Secretary of Agriculture to recruit, train, and accept without regard to the civil service classification laws, rules, or regulations the services of individuals without compensation as volunteers for or in aid of interpretive functions, visitor services, conservation measures and development, or other activities in and related to areas administered by the Secretary through the Forest Service.

Water Quality Improvement Act of April 3, 1970

http://laws.fws.gov/lawsdigest/fwatrpo.html

Amends the prohibitions of oil discharges, authorizes the President to determine quantities of oil which would be harmful to the public heath or welfare of the United States; to publish a National Contingency Plan to provide for coordinated action to minimize damage from oil discharges. Requires performance standards for marine sanitation device and authorizes demonstration projects to control acid or other mine pollution, and to control water pollution within the watersheds of the Great Lakes. Requires that applicants for federal permits for activities involving discharges into navigable waters provide state certification that they will not violate applicable water quality standards.

Water Resources Planning Act of July 22, 1965

http://www4.law.cornell.edu/uscode/42/1962.html

Encourages the conservation, development, and utilization of water and related land resources of the United States on a comprehensive and coordinated basis by the federal government, states, localities, and private enterprises.

Watershed Protection and Flood Prevention Act of August 4, 1954

http://www4.law.cornell.edu/uscode/16/1001.html

Establishes policy that the federal government should cooperate with states and their political subdivisions, soil or water conservation districts, flood prevention or control districts, and other local public agencies for the purposes of preventing erosion, floodwater, and sediment damages in the

watersheds of the rivers and streams of the United States; furthering the conservation, development, utilization, and disposal of water, and the conservation and utilization of land; and thereby preserving, protecting, and improving the Nation's land and water resources and the quality of the environment.

Weeks Act Status for Certain Lands Act of September 2, 1958

http://www4.law.cornell.edu/uscode/16/521a.html

Subjects all lands of the United States within the exterior boundaries of national forests which were or hereafter are acquired for or in connection with the national forests or transferred to the Forest Service for administration and protection substantially in accordance with national forest regulations, policies, and procedures, excepting (a) lands reserved from the public domain or acquired pursuant to laws authorizing the exchange of land or timber reserved from or part of the public domain, and (b) lands within the official limits of towns or cities, notwithstanding the provisions of any other Act, to the provisions of the Weeks Act of March 1, 1911 (36 Stat. 961), as amended, and to all laws, rules, and regulations applicable to national forest lands acquired there under.

Weeks Act of March 1, 1911

http://www.house.gove/resources/105cong/reports/105_a/weeks_.pdf

Authorizes the Secretary of Agriculture to purchase lands within the watersheds of navigable streams in order to promote regulation of the flow of navigable streams or for the production of timber, provided the legislature of the state in which the lands are located consents to the acquisition. This law is the primary land acquisition authority for the Forest Service.

Wild and Scenic Rivers Act of October 2, 1968

http://www4.law.cornell.edu/uscode/16/1271.html

Instituted a National Wild and Scenic Rivers System by designating the initial components of that system, and by prescribing the methods by which and standards according to which additional components may be added to the system from time to time.

Wilderness Act of September 3, 1964

http://www4.law.cornell.edu/uscode/16/1131.html

Established a National Wilderness Preservation System to be composed of federally owned areas designated by Congress as "wilderness areas" and administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as Wilderness. Provides for the protection of these areas, the preservation of their wilderness character, and for the gathering and dissemination of information regarding their use and enjoyment as wilderness. States that no federal lands shall be designated as "wilderness areas" except as provided for in the Act or by a subsequent Act.

Wildlife Game Refuges Act of August 11, 1916

http://caselaw.lp.findlaw.com/scripts/ts_search.pl?title=16&sec=683

Authorizes the President of the United States to set aside lands for the protection of game animals, birds, or fish; and prohibits the hunting, catching, trapping, willful disturbance, or killing of any kind of game animal, game or non-game bird, or fish, or the taking of eggs of any such bird on any lands so set aside or in or on the waters thereof.

Wood Residue Utilization Act December 19, 1980

http://caselaw.lp.findlaw.com/casecode/uscodes/16/chapters/36/subchapters/iv/toc.html

Enacted to develop, demonstrate, and make available information on feasible methods that have the potential for commercial application to increase and improve utilization in residential, commercial, and industrial or power plant applications of wood residues resulting from timber harvesting and forest protection and management activities occurring on public and private forest lands, and from the manufacture of forest products, including wood pulp.

Woodsy Owl/Smokey Bear Act of June 22, 1974

http://caselaw.lp.findlaw.com/casecode/uscodes/18/parts/i/chapters/33/sections/section_711a.html

Prohibits the unauthorized manufacture, reproduction, or use of the character "Woodsy Owl," the name "Woodsy Owl," or the associated slogan "Give a Hoot, Don't Pollute." Also prohibits the unauthorized manufacture, reproduction, or use of the character "Smokey Bear" or the name "Smokey Bear", or a facsimile or simulation of such character or name.

Youth Conservation Corps Act of August 13, 1970

http://www4.law.cornell.edu/uscode/16/1701.html

Establishes a Youth Conservation Corps whom the Secretaries of the Interior or Agriculture may employ without regard to the civil service or classification laws, rules, or regulations for the purpose of developing, preserving, or maintaining the lands and waters of the United States.

REGULATIONS

33 CFR 323 Permits for Discharges of Dredged or Fill Material into Waters of the United States

http://www4.law.cornell.edu/cfr/33p323.htm#33p323s

This regulation prescribes those special policies, practices and procedures to be followed by the Corps of Engineers in connection with the review of applications for permits to authorize the discharge of dredged or fill material into waters of the United States.

36 CFR 60 National Register of Historic Places

http://www4.law.cornell.edu/cfr/36p60.htm#start

Sets forth the procedural requirements for listing properties on the National Register.

36 CFR 63 Determinations of Eligibility for Inclusion in the National Register of Historic Places

http://www4.law.cornell.edu/cfr/36p63.htm#start

Developed to assist agencies in identifying and evaluating the eligibility of properties for inclusion in the National Register and to explain how to request determinations of eligibility.

36 CFR 65 National Historic Landmarks Program

http://www4.law.cornell.edu/cfr/36p65.htm#start

Sets forth the criteria for establishing national significance and the procedures used by the Department of the Interior for conducting the National Historic Landmarks Program.

36 CFR 68 The Secretary of the Interior's Standards for Historic Preservation Projects

http://www4.law.cornell.edu/cfr/36p68.htm#start

Sets forth standards for the treatment of historic properties containing standards for preservation, rehabilitation, restoration, and reconstruction. These standards apply to all proposed grant-in-aid development projects assisted through the National Historic Preservation Fund.

36 CFR 212 Forest Development Transportation System

http://www4.law.cornell.edu/cfr/36p212.htm#start

Sets forth the requirements for the development and administration of the forest development transportation system.

36 CFR 213 Administration Under Bank-Jones Act

http://www4.law.cornell.edu/cfr/36p213.htm#start

Sets forth the requirements relating to the designation, administration, and development of National Grasslands.

36 CFR 219 Planning

http://www4.law.cornell.edu/cfr/36p219.htm#start

Sets forth a process for developing, adopting, and revising land and resource management plans for the National Forest System.

36 CFR 221 Timber Management Planning

http://www4.law.cornell.edu/cfr/36p221.htm#start

Sets forth the requirements for management plans for National Forest timber resources.

36 CFR 222 Range Management

http://www4.law.cornell.edu/cfr/36p222.htm#start

Sets forth the requirements for range management on the National Forests, and for the administration of wild and free-roaming horses and burros and their environment.

36 CFR 223 Sale and Disposal of National Forest System Timber

http://www4.law.cornell.edu/cfr/36p223.htm#start

Sets forth the requirements relating to the sale and disposal of National Forest System timber.

36 CFR 228 Minerals

http://www4.law.cornell.edu/cfr/36p228.htm#start

Sets forth the rules and procedures through which use of the surface of National Forest System lands, in connection with mining and mineral operations, shall be conducted so as to minimize adverse environmental impacts on National Forest System surface resources.

36 CFR 241 Fish and Wildlife

http://www4.law.cornell.edu/cfr/36p241.htm#start

Sets forth the rules and procedures relating to the management, conservation, and protection of fish and wildlife resources on National Forest System lands.

36 CFR 251 Land Uses

http://www4.law.cornell.edu/cfr/36p251.htm#start

Sets forth the rules and procedures relating to the use and occupancy of National Forest System lands.

36 CFR 254 Landownership Adjustments

http://www4.law.cornell.edu/cfr/36p254.htm#start

Sets forth the rules and procedures relating to exchange and conveyance of National Forest System lands.

36 CFR 261 Prohibitions

http://www4.law.cornell.edu/cfr/36p261.htm#start

Sets forth the general prohibitions relating to the use and occupancy of National Forest System lands.

36 CFR 290 Cave Resource Management

http://lula.law.cornell.edu/cfr/cfr.php?title=36&type=part&value=290

Implements the provisions of the Federal Cave Resources Protection Act of 1988. Significant Caves are defined and a process for nominating Significant Caves is provided.

36 CFR 291 Occupancy and Use of Developed Sites and Areas of Concentrated Public Use

http://www4.law.cornell.edu/cfr/36p291.htm#start

Provides for fees charged for the occupancy and use of developed sites and areas of concentrated public use.

36 CFR 292 National Recreation Areas

http://www4.law.cornell.edu/cfr/36p292.htm#start

Sets forth the requirements for the administration of National Recreation Areas.

36 CFR 293 Wilderness-Primitive Areas

http://www4.law.cornell.edu/cfr/36p293.htm#start

Sets forth the requirements for the administration of Wilderness and primitive areas.

36 CFR 294 Special Areas

http://www4.law.cornell.edu/cfr/36p294.htm#start

Sets forth the requirements for designation of special recreation areas.

36 CFR 295 Use of Motor Vehicles Off Forest Development Road

http://www4.law.cornell.edu/cfr/36p295.htm#start

Sets forth the rules and procedures relating to the administrative designation and location of specific areas and trails of National Forest System lands on which the use of motor vehicles traveling off of National Forest development roads is allowed.

36 CFR 296 Protection of Archaeological Resources

http://www4.law.cornell.edu/cfr/36p296.htm#start

Implements the provisions of the Archaeological Resources Protection Act.

36 CFR 297 Wild and Scenic Rivers

http://www4.law.cornell.edu/cfr/36p297.htm#start

Sets forth the rules and procedures relating to federal assistance in the construction of water resources projects affecting Wild and Scenic Rivers or study rivers on lands administered by the Secretary of Agriculture.

36 CFR 800 Implementing regulations for Section 106 of the National Historic Preservation Act

http://lula.law.cornell.edu/cfr/cfr.php?title=36&type=part&value=800

Implementing regulations for Section 106 of the National Historic Preservation Act (36 CFR 800) offer regulatory alternatives to the Section 106 review process called Programmatic Agreements (PA). The forest may satisfy its Section 106 responsibilities through a PA executed by the Forest Supervisor, the State Historic Preservation Officer and the Advisory Council on Historic Preservation. A PA executed in conformance with 36 CFR 800 may provide alternative procedures that are tailored to free the Forest Supervisor from most case-by-case reviews and speeds up routine compliance.

40 CFR 121-135 Water Programs

http://www4.law.cornell.edu/cfr/40p121.htm#40p121s

Sets forth the provisions for the administration of water programs including: State certification of activities requiring a federal license or permit; EPA administered permit programs; State program requirements; procedures for decision making; criteria and standards for the National Pollutant Discharge Elimination System; toxic pollutant effluent standards; water quality planning and management; water quality standards; water quality guidance for the Great Lakes System; secondary treatment regulation; and, prior notice of citizen suits. Title 40 (Protection of Environment), Chapter 1 (Environmental Protection Agency), subchapter D (Water Programs).

40 CFR 1500 Council on Environmental Quality

http://www4.law.cornell.edu/cfr/40p1500.htm#start

Council on Environmental Quality regulations implementing the National Environmental Policy Act.

43 CFR 10 Native American Graves Protection and Repatriation Act Regulations

http://www4.law.cornell.edu/cfr/43p10.htm#43p10s

Implements the provisions of the Native American Graves Protection and Repatriation Act of 1990.

50 CFR 21; and 50 CFR 13. Migratory Birds

http://www4.law.cornell.edu/cfr/50p21.htm#start
http://www4.law.cornell.edu/cfr/50p13.htm#start

The FWS has long-standing regulations that provide for permits to allow certain activities that are otherwise prohibited by the MBTA. These regulations authorize the issuance of permits to take, possess, and transport migratory birds for scientific collecting, control of depredating birds or birds posing a threat to human health and safety, and other activities specified in part 21 of title 50 of the Code of Federal Regulations (50 CFR 21).

EXECUTIVE ORDERS

EO 11593 Protection and Enhancement of Cultural Environment

http://archnet.asu.edu/archnet/topical/crm/usdocs/execord.htm

States that the federal government shall provide leadership in preserving, restoring and maintaining the historic and cultural environment of the Nation, and that federal agencies shall administer the cultural properties under their control in a spirit of stewardship and trusteeship for future generations; initiate measures necessary to direct their policies, plans and programs in such a way that federally owned sites, structures, and objects of historical, architectural or archaeological significance are preserved, restored and maintained for the inspiration and benefit of the people; and, in consultation with the Advisory Council on Historic Preservation, institute procedures to assure that federal plans and programs contribute to the preservation and enhancement of non-federally owned sites, structures and objects of historical, architectural or archaeological significance.

EO 11990 Protection of Wetlands

http://hydra.gsa.gov/pbs/pt/call-in/eo11990.htm

Requires each federal agency to provide leadership and to take action to minimize the destruction, loss or degradation of wetlands, and to preserve and enhance the natural and beneficial values of wetlands in carrying out the agency's responsibilities for acquiring, managing, and disposing of federal lands and facilities; providing federally undertaken, financed, or assisted construction and improvements; and conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

EO 11644 Use of Off-Road Vehicles (amended by EO 11989)

http://www.nara.gov/fedreg/codific/eos/e11644.html

Establishes policies and provides for procedures that ensure that the use of off-road vehicles on public lands will be controlled and directed so as to protect the resources of those lands, to promote the safety of all users of those lands, and to minimize conflicts among the various uses of those lands.

EO 11988 Flood Plain Management

http://hydra.gsa.gov/pbs/pt/call-in/eo11988.htm

Requires each federal agency to provide leadership and to take action to reduce the risk of flood loss, to minimize the impact of floods on human safety, health and welfare, and to restore and preserve the natural and beneficial values served by flood plains in carrying out its responsibilities for acquiring, managing, and disposing of federal lands and facilities; providing federally undertaken, financed, or assisted construction and improvements; and conducting federal activities and programs affecting land use, including but not limited to water and related land resources planning, regulating, and licensing activities.

EO 12088 Federal Compliance with Pollution Control Standards (Amend. EO 12580, 1/23/1987)

http://hydra.gasa.gov/pbs/pt/call-in/eo12088.htm

Delegates responsibility to the head of each executive agency for ensuring that all necessary actions are taken for the prevention, control, and abatement of environmental pollution. This order gives the Environmental Protection Agency authority to conduct reviews and inspections to monitor Federal facility compliance with pollution control standards.

EO 12372 Intergovernmental Review of Federal Programs

http://www.nara.gov/fedreg/codific/eos/e12372.html

Issued to foster an intergovernmental partnership and a strengthened federalism by relying on State and local government coordination and review of proposed Federal financial assistance and direct federal development. It requires federal agencies to provide opportunities for consultation by elected officials of those State and local governments that would provide the non-federal funds for, or that would be directly affected by, proposed federal financial assistance or direct federal development. It also allows states to develop their own process or refine existing processes for state and local elected officials to use in reviewing and coordinating proposed federal financial assistance and direct federal development.

EO 12580 Superfund Implementation

http://envirotext.eh.doe.gov/data/eos/reagan/19870123.html

The President, through this Executive Order, delegated the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C.A. 9601 et. seq.) authority to the heads of the respective federal land management agencies. Another executive order allowed further delegation within the Department of Agriculture from the Secretary of Agriculture to the Chief of the Forest Service, who in turn has delegated the authority to the Regional Forester. Land management agencies will serve as the lead when implementing CERCLA on the lands they administer.

EO 12862 Setting Customer Service Standards

http://www.usbr.gov/laws/eo12862.html
http://govinfo.library.unt.edu/npr/library/direct/orders/2222.html

Requires all executive departments and agencies that provide significant services directly to the public to provide those services in a manner that seeks to meet the customer service standard established in the Order, and requires agencies to identify customers, survey customers and front-line employees to determine the kind and quality of services needed and barriers to those services, benchmark customer service performance against the best in the business, make information, services, and complaint systems easily accessible, and provide a means to address customer complaints.

EO 12898 Federal Actions To Address Environmental Justice in Minority Populations and Low-Income Populations

http://www.fs.fed.us/land/envjust.html

Addresses Environmental Justice in minority and low-income populations and is designed to focus Federal attention on the environmental and human health conditions in minority communities and low-income communities with the goal of achieving environmental justice. The order is also intended to promote non-discrimination in Federal programs substantially affecting human health and the environment, and to provide minority communities and low-income communities access to public information on, and an opportunity for public participation in, matters relating to human health or the environment.

EO 13007 Indian Sacred Sites

http://hydra.gsa.gov/pbs/pt/call-in/eo13007.htm

Requires each executive branch agency with statutory or administrative responsibility for the management of federal lands, to the extent practicable, permitted by law, and not clearly inconsistent with essential agency functions, to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners and to avoid adversely affecting the physical integrity of such sacred sites. Where appropriate, agencies shall maintain the confidentiality of sacred sites.

EO 13175 Consultation and Coordination with Indian Tribal Governments

http://www.blm.gov/nhp/news/regulatory/EOs/eo_13175.html
Recognizes the unique legal relationship between the United States government and Indian tribal governments as set forth in the U.S. Constitution, treaties, statutes, Executive Orders, and court decisions. Requires agencies to respect Indian tribal government sovereignty, to have an accountable process to ensure meaningful input into policies having tribal implications, review processes under which Indian tribes apply for waivers of statutory or regulatory requirements, and strive to meet responsibilities arising from the unique Government-to-Government relationship.

EO 13186 Migratory Birds - January 10, 2001

http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2001_register&docid=fr17ja01-142.pdf

This order outlines the responsibilities of federal agencies to protect migratory birds. The Executive Order will: (1) Enhance coordination and communication among federal agencies regarding their responsibilities under the four bilateral treaties (with Canada, Mexico, Japan, and Russia) on the conservation of birds; (2) Provide broad guidelines on migratory bird conservation responsibilities and require that more detailed guidance be developed via Memoranda of Understanding between the U.S. Fish and Wildlife Service and federal agencies within two years; (3) Incorporate national level planning for bird conservation into agency activities and provide the formal support for agencies to enhance coordination and cooperation; (4) Apply to the Departments and Agencies of the federal government including the Departments of Agriculture, Interior, Commerce, Transportation, Energy, Defense and the Environmental Protection Agency.

EO 13212 Actions to Expedite Energy-Related Projects - May 18, 2001

http://frwebgate.access.gpo.gov/cgi-bin/getdoc.cgi?dbname=2001_register&docid=fr22my01-134.pdf

"Actions to Expedite Energy-Related Projects" states: "In general, it is the policy of this Administration that executive departments and agencies shall take appropriate actions, to the extent consistent with applicable law, to expedite projects that will increase the production, transmission, or the conservation of energy."

This Executive Order addresses the issue of improving the internal management of the Federal Government to effectively and efficiently process lease proposals.

FOREST SERVICE DIRECTIVES

The Forest Service Directives System consists of all Forest Service manuals and handbooks. While the Forest Plan sets the Desired Future Condition of the Forest, the Directives System is the primary basis for the control of all internal programs and serves as the primary source of administrative direction for Forest Service employees. The system sets forth legal authorities, management objectives, policies, responsibilities, delegations, standards, procedures, and other instructions.

The Forest Service Manual (FSM) contains legal authorities, goals, objectives, policies, responsibilities, instructions, and the necessary guidance to plan and execute assigned programs and activities.

Forest Service Handbooks (FSH) is directives that provide instructions and guidance on how to proceed with a specialized phase of a program or activity. Handbooks either are based on a part of the Manual or they incorporate external directives.

A complete listing of the directives can be found in Forest Service Manuals and Forest Service Handbooks at http://www.fs.fed.us/im/directives/.

Foot bridge on the Sheltowee Trace, Stanton Ranger District.

Appendix C

TABLES

Table C - 1. Crosswalk of Forest Type* Groups for the DBNF Plan

	Source of Grouping		
Group Name	**Old-Growth Analysis**	**Viability Analysis**	**SPECTRUM Analysis**
Conifer/N. Hdwd.	3,4,5,8,9,10	8,9,10,42	
W. Pine/Hemlock		3,4,5	3,4,5,8,9,10
Mixed Mesophytic	41,50,56,81	41,50,56,81	
Mixed Mesophytic/Floodplain			41,50,56,58,61,71,72,74,75,81,82,88
River Flood plain Hdwd.	46,58,71,72,75	Riparian Assoc.	
Eastern River Front	74,82	Riparian Assoc.	
Dry-Mesic Oak	42,51,52,53,54,55	51,53,54,55	
Xeric-Mesic Oak			42,43,51,52,53,54,55,59,60
Dry-Xeric Oak	43,52,59,60	52,59,60	
Dry-Xeric Redcedar Oak		11,35,43	
Mixed Oak/Yellow Pine			44,45,46,47,48
Dry-Mesic Oak-Pine	31,44,45,47,48		
Dry-Xeric Mixed Pine & Oak		16,45	
Dry-Mesic Mixed Pine & Oak		12,13,15,44,46,47,48	
(Xeric) Pine & Pine-Oak	12,13,15,16,20,32,33,38		11,12,13,15,16,17,31,32,33,35,38
Yellow Pine		31,32,33,38	

* See Silvicultural Examination and Prescription Field Book (USDA Forest Service 1992) for Forest Type codes.

Activities displayed in Table C - 2.a. and Table C - 2.b. reflect budget allocations expected for the natural resource management program areas, based upon a constrained budget of no more than 10% increase over the planning period (2000-2001 base years). Additional activities can occur if a budget greater than the constrained budget is provided.

Table C – 2.a. Estimated Timber Program and Allowable Sale Quantity, DBNF

Item	Unit	Amount, (1st Decade)
Total Timber Sales (Program Quantity)	MMCF[1]	22.9
Allowable Sale Quantity (ASQ)	MMCF	21.9
Harvest Area (Suitable Timberland)	Acres	18,750

[1] Million Cubic Feet

Table C - 2.b. Planned Annual Schedule of Activities and Improvements[1]

Activities	Units	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	10-Year Objective	Source	LT Objective	LT Source
VEGETATION MANAGEMENT															
Total Timber Sales (Program Quantity)	MMCF	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	2.29	n/a	Spectrum est.		
Timber Harvest Area[2]	Acres	1,553	1,553	1,553	1,553	1,553	1,553	1,553	1,553	1,553	1,553	18,750	1.K.1.A., 3.H.1.A.		
Reforestation-Yellow Pine (all)	Acres	822	822	822	822	822	822	822	822	822	822	8,200	1.K.2.E.	42,000	1.K.2 & 1.1.F.
Total Reforestation	Acres	2,353	2,353	2,353	2,353	2,353	2,353	2,353	2,353	2,353	2,353				
Wooded Grassland Established-Pine	Acres	100	0	0	0	0	0	0	0	0	0	100	1.K.2.C.	7,350	1.K.2.B. & 1.5
Wooded Grassland Established-Hdwd.	Acres	60	60	60	60	60	60	60	60	60	60	600	1.K.2.I.	11,200	1.K.2.F. & 1.5
Woodland Established-Pine	Acres	50	50	50	50	50	50	50	50	50	50	500	1.K.2.E.	14,700	1.K2.C.
Woodland Established-Hardwood	Acres	610	610	610	610	610	610	610	610	610	610	6,100	1.K.2.K.	44,000	1.K.2.G.
Thinning-Forest (60BA)[3]	Acres	900	900	900	900	900	900	900	900	900	900	5%	1.K.1.D.	5%	1.K.1.D.
Thinning Overstocked Forest	Acres	*	*	*	*	*	*	*	*	*	*	*		All >80% stock	2.1.A.
Pitch Pine Restoration	Acres	300	300	300	300	300	300	300	300	300	300	3,000	1.1.D.	3,000	1.1.D.
Upland White Pine Plantations-Conversion	Acres	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a		ALL	1K1G.& 2.4B
Total Prescribed Burn Acres	Acres	15,000	19,000	23,000	27,000	31,000	35,000	39,000	43,000	47,000	50,000	50,000	EIS, Table 3-15	50,000	2.4.C.
Maintain Openings (1600 ac./3years)	Acres	533	533	533	533	533	533	533	533	533	533	1,600	1K.1.B	1,600	1K.1.B
WATER SOURCES															
Significant Indiana Bat Cave Areas	structures	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	1/.5 mi.	1.2.B.	1/.5 mi.	1.2.B.
SPECIAL COMMUNITIES															
Open Canopy Developed (uneven-aged)	Acres	107	107	107	107	107	107	107	107	107	107	1075[1%]	1.E.2.C.	1-2%	1.E.2.C.
Fixed Shrub Openings	Acres	107	107	107	107	107	107	107	107	107	107	1075[1%]	1.E.2.B	1-2%	1.E.2.B
Canebrakes Developed	Acres	107	107	107	107	107	107	107	107	107	107	1075[1%]	1.E.2.D.	1-2%	1.E.2.D.
Canebrakes Maintenance	Acres		107	214	321	428	535	642	749	856	963				
WATERSHEDS															
Watershed Improvement	Acres	120	120	120	120	120	120	120	120	120	120	760	1.E.3.A.,3.B.		
RECREATION															
Non Motorized Trails Established	Miles	6	2	2	2	2	2	2	2	0	0	20			
Trails Maintained (BMPs)[4]	Miles	126	130	132	134	137	137	137	137	137	137	685	12.1.B	100%	
Inventory & address user developed trails	Miles	20%	20%	20%	20%	20%	0	0	0	0	0	100%	12.1.C	100%	
OHV trails (constructed)	Miles	15	15	6	6	6	6	6	0	0	0	60	EIS, Table 3-4		
ROADS (SYSTEM)															
Construct (Redbird District)	Miles	2	2	2	2	2	2	2	2	2	2	20	Estimate		
Repair or decommission	Miles	15	15	15	15	15	15	15	15	15	15	150	12.0.A.		
INTEGRATED INVENTORY															
Forest Inventory	Acres	66,400	66,400	66,400	66,400	66,400	66,400	66,400	66,400	66,400	66,400	663,682	1G.2A & ch.5,#2	Forestwide	1.G.2.A.
Assess Rare Communities	Acres	120	120	120	120	120	120	120	120	120	120	~1200	1.G.2.A.		
Assess Designated O.G. Areas	Acres	1,533	1,533	1,533	1,533	1,533	1,533	1,533	1,533	1,533	1,533	15,331	EIS, Table 3-6	15,331	EIS, Table 3-6
Assess Possible O.G. Areas	Acres	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	1,800	18,033	Preliminary Inv.	Site Specific	
Heritage Inventory	Acres	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	5,000	50,000	6.3.A	456,000	
Heritage Site Evaluation	Sites	10	10	10	10	10	10	10	10	10	10	100	6.4.A.	4,500	
LAND ACQUISITION															
Acquisition (10 yr. historic mean)	Acres	~2900	~2900	~2900	~2900	~2900	~2900	~2900	~2900	~2900	~2900		13.2.A.		

[1] Based upon Constrained EIS Budget, 1st Period.

[2] Includes 1K harvest (cliff/bat/rip/0-10 bug removed) and grouse areas (3H = 8744 ac., with cliff/bat/riparian removed).

[3] 5% of area thinned to 60BA [cliff/bat/rip/0-10 bug removed].

[4] Maintain trails to BMPs, 20% per year.

* Estimates of annual thinning as a result of this objective could range from 0 to 1000 acres, based on future inventories, site-specific needs, and other factors.

Table C - 3. Summary of Allocations in Acres

Semi-primitive Non-motorized		20,811
Semi-primitive Motorized		13,875
Roaded Natural		617,331
Rural		41,623
Urban		88
Scenic Integrity Objective	**Very High**	22,876
	High	236,740
	Medium	24,752
	Low	395,375
1.A. Research Natural Area		658
1.C Cliffline Community Area Total/Without		111,205/ 102,029
1.E. Riparian Aquatic Area Total/Without		155,379/ 141,326
1.G. Rare Community		1,200
1.I Old-growth (Total/Without riparian & cliff)		15,300/ 10,420
1J. Significant Bat Caves		6,115
1.K. Habitat Diversity Area		375,891
2.A. Clifty Wilderness		12,646
2.B. Beaver Creek Wilderness		4,791
3.A. Developed Recreation Area (existing)		3,700
3.B. Large Reservoirs		30,673
3.C.1 Red River Wild Segment Nat'l W&S River		683
3.C.2 Proposed W&S River: Marsh Creek Wild		1,244
3.C.3. Red River Recreational W&S River		1,440
3.C.4. Proposed W&S River: Cumberland River, War Fork Creek, Rockcastle River, Rock Creek- Scenic and Recreational Rivers		5,622
3.C.5. Proposed Wild and Scenic River: Rock Creek and Marsh Creek Recreational Rivers		6,184
3.E. Red River Gorge Geological Area (Prescription w/o Wilderness/Total Area Acres)		16,042 / 29,298
3.F. Natural Arch Scenic Area		1,065
3.H.2. Ruffed Grouse Management Area		10,535
5.A. Communication Sites		20
5.C. Source Water Protection Area Zone1/Zone2		34,015

Table C - 4. Timberland Suitability[1] Classification, Daniel Boone National Forest

Priority[2]	Land Use / Prescription	Land Class Code[3]	Acres	Total Acres
1	Water	100-199	17,916	
2	Roads	230	8,704	
3	Railroads	230	66	
4	Admin/Recreation Sites & Other Non-forest	200-219, 260	2,081	
5	W/L Openings	250-259	1,922	
6	Utilities	220	1,231	
	Total Stage 1 - Non-forest land			**31,920 (4.6%)**
7	*Wilderness (Clifty & Beaver Creek)	350	16,692	
8	*RNA (Rock Creek)	330	189	
9	*Wild & Scenic River (Wild)	310	76	
10	Wild & Scenic River (except Wild)	310	1,181	
11	Scenic Area (Natural Arch)	310	1,052	
12	Geological Area (Red River Gorge)	340	15,725	
13	Forest land not Capable of Adequate Growth	900	275	
14	Forest land where Technology is Lacking	700	1,246	
	Total Stage 1 – Unsuitable forest			**36,465 (5.3%)**
15	*RNA Proposed (Elisha Cr.[4])	430	161	
16	*Wild & Scenic River – Proposed (Wild)	410	1,194	
17	Wild & Scenic River – Proposed (ex. Wild)	410	11,042	
18	Rare Communities (1G)	820	858	
19	Significant Bat Cave Zone (1J)	803	5,260	
20	Cliffline (1C),	803	95,538	
21	Water Protection (300' of 5B, all in above Rx's)	820	0	
22	Designated Old-growth (1I)	820	12,141	
23	Forest around Rec.& Admin. Areas (3A)	850	2,091	
24	300' Lake Management Zone (3B)	851	10,319	
25	Riparian Area (1E) (ex. # 28 below)	820	93,269	
26	Wooded grassland (long-term objective)	820	18,375	
27	Economically unsuitable lands	821-827	7,010	
28	Grassy openings to create	(250)	278	
	Total Stage 3 - Unsuitable forest			**257,536 (37.1%)**
27	Water Protection (5B – except Zone 1 buffer)	660	15,020	
28	Riparian Uneven-aged (2% of Rx)	660	2,757	
29	Grouse Management Area (3.H.2)	630	8,156	
30	Habitat Diversity Area (1K)	650	341,872	
	Total Suitable forest			**367,805 (53.0%)**
	Total National Forest System, DBNF 1998			**693,726 (100 %)**

[1] Lands considered suitable are those where scheduled timber harvest is an objective. Harvesting of trees may occur on any NFS lands except those marked with an asterisk (*).

[2] Where overlap of classification occurs, lower numbers have priority, e.g., water is removed from Wilderness.

[3] Codes in Silvicultural Examination and Prescription Handbook - 2409.26d

[4] Proposed Tight Hollow RNA included in Red River Gorge acres.

Table C - 5. Scenic Integrity Objectives (SIO) By Prescription Area

Prescription Area	SIO*	Acres[1]
1.A. Research Natural Area[2]	H	658
1.C. Cliffline Community	H	100,994
1.E. Riparian Aquatic	H	135,408
1.G. Rare Community[3]	H	1,200
1.I. Old-growth	H	253
	M	7,182
	L	7,856
1J. Significant Bat Caves	H	294
	M	1,478
	L	3,777
1.K. Habitat Diversity	H	38
	M	10,678
	L	380,382
2.A. Clifty Wilderness	VH	11,985
2.B. Beaver Creek Wilderness	VH	4,816
3.A. Developed Recreation Area (existing)[4]	M	3,700
3.B. Large Reservoirs	H	30,673
3.C.1 & 3.C.3 Red River Nat'l W&S River	VH	2,123
3.C.2 Proposed W&S Rivers: Wild segments	VH	1,244
3.C.4. Proposed W&S River: Scenic segments	H	5,622
3.C.5. Proposed W&S River: Recreation segments	H	6,184
3.E. Red River Gorge Geological Area	VH	15,751
3.F. Natural Arch Scenic Area	VH	1,065
3.H.2. Ruffed Grouse Management Area	M	31
	L	10,504
5.A. Electronic Sites[5]	M	20
5.B. Source Water Protection Area Zone 1 / Zone 2	M	6,343
	L	13,130
Total Scenic Integrity Objective Acres	VH	22,876
	H	236,740
	M	24,752
	L	395,375

*The Scenery Management System inventory may need refining and updating as conditions warrant. This normally will be done during project design and field analysis. Conditions that could typically warrant a change in the inventoried scenic class, which could result in an adjustment to the scenic integrity objective, are:

- Changes in "scenic attractiveness" classification
- Changes in "viewer location" and "concern level"
- Changes in "seen area" mapping"

[1] Total National Forest System land in GIS system, except as noted. Acres may not sum because prescription areas overlap.

[2] Total existing and proposed acres/ Rock Creek RNA existing acres

[3] Of the1,200 acre estimate for Rare Community, about 1,100 acres have been mapped as of 2002.

[4] Obtained from inventory table.

[5] Obtained from inventory table.

Table C - 6. Desired Habitat Components in the Habitat Diversity Prescription Area (acres)

Habitat Condition	Licking Mgt. Area (MA)	Middle Kentucky Mgt. Area	Upper Cumberland Mgt. Area	Upper Kentucky Mgt. Area	Total[1]	Decade to Reach total[2]
Early-age forest (0-10 years old)	5% of each 5th level HUC[3]	5% of each 5th level HUC	5% of each 5th level HUC	5% of each 5th level HUC	18800	1st
Permanent grassy (or shrubby) openings	0.07% of MA	0.05% of MA	0.2% of MA	0.08% of MA	1600	1st
≥70 yr old forest with vertical structure	30% of each 5th level HUC	30% of each 5th level HUC	30% of each 5th level HUC	30% of each 5th level HUC	112800	1st
60-70 BA forest	5% of each 5th level HUC	5% of each 5th level HUC	5% of each 5th level HUC	5% of each 5th level HUC	18800	1st
≥60 year old forest with dense shrub/sapling layer, no midstory	10% of each 5th level HUC	10% of each 5th level HUC	10% of each 5th level HUC	10% of each 5th level HUC	36000	1st
Hemlock-white pine forest	unknown[4]	unknown	unknown	unknown	2900-3100	1st
Conifer-northern hardwood forest	unknown	unknown	unknown	unknown	2600-2800	1st
Beech forest	unknown	unknown	unknown	unknown	3300-3600	1st
Dry-mesic oak forest	unknown	unknown	unknown	unknown	120000-160000	1st
Dry-xeric oak forest	unknown	unknown	unknown	unknown	18000-22000	1st
Yellow pine restoration/maintenance	4000	6000	31600	400	36000-48000	5th
Yellow pine dominated wooded grassland/shrubland	370	1100	0	5880	6300-8400	10th
Yellow pine dominated woodland	740	2200	0	11760	12600-16800	10th
Yellow pine dominated forest >20 years old	unknown	unknown	0	unknown	17100-22800	6th
Oak dominated wooded grassland/ shrubland	1680	1680	2800	5040	8700-13650	5th
Oak dominated woodland	6600	6000	11000	19800	37800-50400	3rd
Oak dominated forest, open midstory, well-developed herbaceous, low shrub layer; fire maintained	unknown	unknown	unknown	unknown	31500-42000	1st
Ponds[5]	unknown	unknown	unknown	unknown	unknown	unknown

[1]This is the total of acres to be reached by the specified decade, and thereafter maintained across the Forest in this Prescription Area. Acres may occur in more than one category and totals are not additives.

[2]A specified decade is the decade in which the total is first reached; thereafter, the total is maintained decade to decade.

[3]Percentages indicate the means by which the total acres are allocated. Percentages indicated are of either 1) the total 1.K. Prescription Area within each 5th level HUC (watershed) or 2) the total 1.K. Prescription Area within the Management Area.

[4] [unknown] indicates the habitat condition is not specifically allocated by Management Area. The total figure on the Forest is the desired condition. Distribution is based on ecological capability across the Forest.

[5]The distribution of ponds is based on ecological capability and site-specific habitat needs, and the total needed for the Forest is unknown.

Appendix D

MONITORING ELEMENTS

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
1	Are rare communities being protected, maintained, and restored?	Trends in the numbers, locations, abundance and conditions of rare community occurrences by type	1	Schedule site visits to map and track locations, composition and condition of rare communities utilizing standard GIS coverage and NRIS Terra, FSVeg and Fauna databases. Utilize standard reports for Annual M&E reporting.	5-Year Cycle	Annual	Moderate	Moderate	Forest Ecologist or Botanist				
1	Are rare communities being protected, maintained, and restored?	Acres and/or number of occurrences of rare communities treated to maintain or restore desired conditions	2	Visit each at least once every 5 years and determine trend in conditions. Track annual accomplishments with standard tracking systems.	Annual	Annual	Moderate	High	Forest Ecologist or Botanist				
2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Status and trend in forest cover acreage by major forest and woodland community type and age class	3	Map and update changes through routine inventories. Monitor acres by major forest and woodland community type and trends? Vegetation data will be frozen and stored in a retrievable format.	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				
2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Acres of silvilcultural treatments implemented by activity type and forest type	4	Summarize acres of treatments by major community type utilizing established activity tracking systems.	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Acres burned (wildland and prescribed fire) by forest type and season of burn compared to desired fire regimes	5	Acres burned (wildland and prescribed) by major forest community type. Maps of prescribed burn units and wildland fires are incorporated into the GIS database annually, by the end of the calendar year. Total acres are determined from a GIS query.	Continuous	Annual	Moderate	Moderate	Forest Ecologist, District and Forest FMO				
2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Trends in (populations of MIS that were selected as ecological indicators) in relationship to the (major forest community/condition MIS was selected to indicate)	6	Utilize both Breeding Bird Surveys, driving route, and R8 Land Bird Strategy databases to compare frequency and density of each species, to the appropriate habitat condition]	Annual	3 Years	Moderate	Moderate	Forest Biologist				
2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Trends in harvest data of MIS that were selected as demand species in relationship to the habitat improvement activities for the species. (deer)	7	Collect data from Kentucky Department of Fish and Wildlife Resources related to annual accomplishments for habitat improvement tracked with standard tracking systems.	Annual	5 Years	Moderate	Moderate	Forest Biologist				
2	Are landscape-level and stand-level composition and structure of major forest communities within desirable ranges of variability?	Trends in populations of MIS selected as species of special interest in relationship to management action to restore the species on the Forest. (pitch pine)	8	Track acres of accomplishments with standard tracking systems.	Annual	3 Years	Moderate	Moderate	Forest Silviculturist				
3	Are high high-elevation habitats being provided?	How many acres of high-elevation habitats exist and what are the trends in their abundance and condition	9	Map and update changes through routine inventories. Monitor acres and trends?	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
3	Are permanent grassy openings being maintained?	Total acres of Grassy openings and acres of opening maintenance activity implemented by activity type	10	[Track by standard tracking systems] Field observation of successful establishment of native grass communities in existing fescue fields being converted to native grasses. Use native planting monitoring form on file in S.O.	Continuous	Annual	Moderate	Moderate	Forest Biologist				
3	Are permanent grassy openings being maintained?	Acres of other permanent openings (pasture, ROW, etc.) and acres of maintenance activity implemented by activity type	11	Track acres of condition in GIS & NRIS.	Annually	Annual	Moderate	Moderate	Biology Section				
3	Are key successional stage habitats being provided?	Acreage of existing and potential old-growth by forest community class	12	Rerun Inventory and Monitoring Institute and CISC analysis periodically or as needed	5 years	5 years	Moderate	Moderate	Forest Silviculturist				
4	How well are key terrestrial habitat attributes being provided?	Trends in hard mast production capability	13	Map and update changes in forest composition and condition through routine inventories. Infer mast production capability from the status of older age classes of oak forest community types	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				
4	How well are terrestrial habitat attributes being provided?	Abundance of snags and downed wood	14	Map and update changes in forest age class structure and area impacted by insect and disease through routine inventories. Infer snag and downed wood by the acres of older age class forests and mortality due to insects and disease	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				
4	How well are terrestrial habitat attributes being provided?	Trend in riparian area acreage by forest type and age class distribution.	15	Map and update changes in riparian areas, forest community type and age class distribution.	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				
4	How well are terrestrial habitat attributes being provided?	Acres of vegetation management implemented in riparian areas by activity type	16	Track annual accomplishments with standard tracking system	Continuous	Annual	Moderate	Moderate	Forest Silviculturist				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
5	What is the status and trend in aquatic habitat conditions in relationship to aquatic communities?	Trends in populations of fish and aquatic macro invertebrates	17	Results of systematic stream fish community inventories. Fish species are sampled with electrofishing; aquatic macro invertebrates with snorkeling, nets, surber samplers, and/or other techniques using defined protocols	Populations of aquatic species are monitored at least once every ten years	Annual	Moderate	Moderate	Forest Fisheries Biologist				
5	What is the status and trend in aquatic habitat conditions in relationship to aquatic communities?	Trends in water quality parameters and physical habitat conditions in relationship to aquatic communities	18	Sample water quality, stream stability, streambed structure and coarse woody debris as appropriate during systematic stream fish and aquatic macro invertebrate community inventories.	At least once every 10 years	Annual	Moderate	Moderate	Forest. Fisheries Biologist and Hydrologist				
6	What are status and trends of forest health threats on the forest?	Track ambient air quality trends.	19	Query state and federal air quality databases and summarize ambient air quality conditions near the Forest, especially PM2.5, acid deposition, and ozone.	Annual	Annual	High	High	Zone Air Specialist				
6	What are status and trends of forest health threats on the forest?	Monitor effects of air pollution on terrestrial resources, soil, and vegetation.	20	Complete an assessment of watersheds at risk from acid deposition. Collect appropriate soil and/or vegetation information to assess soil nutrient status in high risk areas.	Periodically, as needed	Periodically	Moderate	Moderate	Zone Air Specialist, Soil Scientist, Silviculturist				
6	What are status and trends of forest health threats on the forest?	Conditions and trends of forest fuels and acres of hazardous fuels treated through wildland fire use, prescribed fire, and mechanical treatment	21	Fuel monitoring following Regional protocol. Fuel consumption and acres of hazardous fuels treated through wildland fire use, prescribed fire, and mechanical treatment mapped into the GIS database reports generated through GIS/NRIS FSVeg queries.	Continuous	Annual	Moderate	Moderate	District FMO & Forest FMO				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
6	What are status and trends of forest health threats on the forest?	Compliance with NAAQS air particulate emissions from NF lands [36 CFR 219.27(a)(12)]	22	Quantify PM2.5 emissions from prescribed and wildland fire use. Monitor PM2.5 from a subset of burns to assess effectiveness of smoke modeling results and smoke management practices.	Annually	Annual	Moderate to High	Moderate to High	Forest FMO and Zone Air Specialist				
6	What are status and trends of forest health threats on the forest?	Trends in native insect and disease effects [36 CFR 219(k)(5)(iv),	23	Sample for specific insects or disease as evidence of infestations occurs following established protocols for the organisms of concern. Track Forest Health Monitoring results to identify emerging concerns.	As needed	Annual	Moderate	Moderate	Forest Silviculturist and Forest Health Field Unit				
6	What are status and trends of forest health threats on the forest?	Trends in forest composition and condition that have been associated with these insects and diseases	24	Map and update changes through routine inventories, indicating source of impacts due to native insects and disease. Utilize annualized FIA and Forest Health Monitoring results to validate findings.	Continuous	Annual	Moderate	Moderate	Forest Silviculturist and Forest Health Field Unit				
6	What are status and trends of forest health threats on the forest?	Are planned measures to control destructive insects and disease being achieved? [36 CFR 219.12(k) 5(iv)]	25	Track annual accomplishments with standard tracking system	Annual	Annual	Moderate	Moderate	Forest Silviculturist and Forest Health Field Unit				
6	What are status and trends of forest health threats on the forest?	Trends in the number of occurrences and/or acreage of selected non-native species? [36 CFR 219(k)(5)(iv),	26	Track changes in acreage and conditions of non-native invasive plants mapped and inventoried. Sample for specific non-native insects or disease in anticipation of their occurrence and during infestations. Follow established protocols for the organisms of concern. Track Forest Health Monitoring results to identify emerging concerns.	As needed	Annual	Moderate	Moderate	Forest Ecologist, Forest Silviculturist and Forest Health Field Unit				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
6	What are status and trends of forest health threats on the forest?	Effectiveness of treatments to eliminate or control invasive non-native species?	27	Interdisciplinary review of treatments results	Annually or at conclusion I&DC project as needed	Annual	Moderate	Moderate	Forest Silviculturist and Forest Health Field Unit				
7	What are the status and trends of federally listed species and species with viability concerns on the forest?	Population trends in federally listed species as an indicator of effectiveness of management on recovery of the species [	28	Follow recovery plan and guidance	Seasonal	Annual	High	High	Forest Biologist				
7	What are the status and trends of federally listed species and species with viability concerns on the forest?	Trends in recovery of T&E species. [36 CFR 219.19 (a)(7)]	29	Various methods will be used as appropriate to the species or species group to monitor status, trends and distribution	Various	As information is available	High	High	Forest Biologist and Forest Ecologist				
7	What are the status and trends of federally listed species and species with viability concerns on the forest?	Status and trends in bird communities	30	Breeding Bird Survey occurrence trends for the bird communities	Annual	3 Years	Moderate	High	Forest Biologist				
7	What are the status and trends of federally listed species and species with viability concerns on the forest?	Trends in status and distribution of some viability concern species that are not specifically identified under other elements. Species targeted under this element will be determined through periodic review of each species' status and conservation priority. Priorities will likely vary through the life of the plan as new information is obtained.	31	Various methods will be used as appropriate to the species or species group. Refer to PETS Species Inventory and Monitoring Handbook.	Annual	Annual	Moderate	Moderate	Forest Biologist and Forest Ecologist				
8	What are the trends for demand species and their use?	Trends in the number of permits issued and harvest levels for selected special forest products	32	Compile reports from records of permits issued	Annual	Annual	Moderate	Moderate	Forest Ecologists and Forest Products Staff				
8	What are the trends for demand species and their use?	Fish stocking levels by type and location	33	Collect stocking records from Cooperating State Agency	Annual	Annual	Moderate	Moderate	Forest Fisheries Biologist				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
9	Are high quality, nature-based recreation experiences being provided and what are the trends	Results and trends in user satisfaction ratings [36 CFR 219.21(a)]	34	Analysis of NVUM customer satisfaction data for Day Use, Overnight General Forest Area, and Wilderness programs and local Customer Satisfaction survey tools.	5 years NVUM - 1 year Local Customer	5 years - update annually	Low - Low	High - Moderate	SO-Recreation Staff				
9	Are high quality, nature-based recreation experiences being provided and what are the trends	Backlog of facility and trail maintenance needs and trends	35	Analysis of INFRA Deferred Maintenance Report and reporting of per cent change in backlog.	Annually	Annual	Moderate	Moderate	SO-Recreation Staff				
9	Are high quality, nature-based recreation experiences being provided and what are the trends	Trends in financial resources needed and available to provide recreational opportunities	36	Analysis of incoming funds - traditional budgets and fee collections - and costs of operations, in view of needs. Reports using INFRA and FFIS, and Trend Tracker data.	Annually	Annual	Low	Moderate	SO-Recreation Staff				
9	Are high quality, nature-based recreation experiences being provided and what are the trends	Trends in health and safety associated with recreation programs	37	Report on meeting critical standards for developed facilities, trails and GFAs.	Annually	Annual	High	Moderate	SO - Recreation Staff				
9	Are high quality, nature-based recreation experiences being provided and what are the trends	Accessibility of developed sites and facilities	38	Summary report of all accessibility complaints and how they are dealt with.	Annually	Annual	Moderate	High	District/SO-Recreation Staff				
10	What are the status and trends of recreation use impacts on the environment?	Illegal or unauthorized recreational uses observed and the effects of these uses	39	Analysis of LEIMARS report - incidents, and warning /violation notices for illegal activities related to recreation - for trends in illegal activity. M & E Report.	Annually	Annual	High - Low Depending of the type, intensity and frequency of activity	High	Recreation Staff SO				
10	What are the status and trends of recreation use impacts on the environment?	Recreation activities contribution to the degradation of terrestrial, aquatic, rare or riparian areas or adversely affecting water quality	40	Evaluation of recreation's possible contribution to particular problems identified by other monitoring elements in this plan. Amount of recreation use and type of activity will be considered. M&E Report. See monitoring questions#1, 5,6,7, 8, 9,15.	Annually	Annual	Moderate	Moderate	Recreation Staff SO and natural resource scientists				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
10	What are the status and trends of recreation use impacts on the environment?	Accelerated sediment delivery and bank instability resulting from dispersed recreation along priority streams/rivers and improvements being made to reduce these impacts where necessary	41	Primarily visual observation of dispersed recreation area/trail condition and documentation of improvement needs. Documentation of improvement needs in riparian improvement needs inventory.	Annually	Annual	Moderate	Moderate	Watershed Staff and Recreation Staff				
11	What is the status and trend of wilderness character?	Trends in air quality related values in Class 2 Wilderness areas [36 CFR 219.27(a)(12)]	42	Water quality sampling; soil and vegetation sampling for acid deposition effects.	Every 5 years	Every 5 years	Moderate	Moderate	Districts, Hydrologist, and Soil Scientist				
11	What is the status and trend of wilderness character?	Is wilderness visitor use within limits that do not impair the values for which the wilderness was established? [36 CFR 219.18(a)]	43	Analyze trends in wilderness visitor use and compile summary report using GIS mapping (number and location of concentrated use areas) and use of visitor satisfaction results using NVUM and wilderness trailhead registration data.	Every 5 years	Every 5 years	Moderate	High	District				
12	What are the status and trend of Wild and Scenic River conditions? Also see Appendix F for Red River	Are free-flowing conditions being protected?	44	Implement annual program review at the forest level to track number and types of projects implemented along the river corridor. Include discussion in annual M&E report.	Annually	Annual	Moderate	High	SO				
12	What are the status and trend of Wild and Scenic River conditions? Also see Appendix F for Red River	Are the Outstandingly Remarkable Values being protected?	45	Implement annual program review at the forest level to track number and types of projects implemented along the river corridor. Include discussion in annual M&E report.	Annually	Annual	Moderate	Moderate	SO				
13	Are the scenery and recreation settings changing and why?	Acres of National Forest land that affect scenic quality objectives [36 CFR 219.27(c)(6), 36 CFR 219.27(d)(1)]	46	Treatment and location data entered in activity tracking system at time treatment completed. Summary report of project acres that affect the assigned SIO. M&E report.	Continuous	Annual	Low	Moderate	SO-Recreation Staff (Forest Landscape Architect)				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
13	Are the scenery and recreation settings changing and why?	Acres of National Forest land that affect established ROS objectives	47	Treatment and location data entered in activity tracking system at time treatment completed. Summary report of project acres that affect the assigned ROS objective. M&E report.	Continuous	Annual	Low	Moderate	SO-Recreation Staff (Forest Landscape Architect)				
14	Are heritage sites being protected?	Effectiveness of sites evaluated for the National Register of Historic Places? [36 CFR 219.24(a)(3)]	48	Evaluate 5 sites per year	Annually	Annual	Moderate	High	Forest and District Archeologist	$15,000 per site			
14	Are heritage sites being protected?	Effectiveness of heritage protection measures effective? [36 CFR 219.24(a)(4)]	49	Sample field condition assessment of 50 sites eligible or listed in National Register. M&E Report	Annually	Annual	High	High	Forest and District Archeologist	$250 per site			
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Stream stability in reference watersheds compared to stability of streams in watersheds where projects are occurring	50	Conduct stream substrate sampling on a subset sample of projects once per year (September – October or following a major storm event) using procedures such as those described by Kappesser (2002). Evaluate project watersheds and compare with reference watershed data.	Continuous	Annual	Moderate	High	Forest Hydrologist				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Stream water temperatures in reference watersheds compared to watersheds where projects are occurring (maximums and minimums)	51	Install data loggers in all reference watershed streams and use data from them to compare with data from managed watersheds. Once a year, conduct statistical analysis to evaluate occurrence and significance of differences.	Continuous	Annual	Moderate	High	Forest Fisheries Biologist				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Condition and trend of chemical resilience of watersheds across the Forest as indicated by chemical parameters	52	Water quality sampling protocol	Periodic	Annual	Moderate	High	Forest Hydrologist				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Are State BMPs and Forest Standards being implemented to protect and maintain soil and water resources? [36 CFR 219.27(a)(4), 36 CFR 219.12(k)(2)]	53	Field inspection of project sites following established monitoring protocol. Results reported annually in M&E Report.	Periodic or at random	Annual	Moderate	High	Forest hydrologist or soil scientist				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Is Standards (BMPs) Effective minimizing non-point source pollution?	54	Sample project activities related to BMPs for effectiveness of BMPs and standards. 1) Visual inspection of standards, 2) Measured effects of standards, and/or 3) Aquatic biota inventories - Results reported annually in M&E Report.	Periodic or at random	Annual	Moderate	High	Forest hydrologist or soil scientist				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Effect of management activities on soil quality and productivity [36 CFR 219.12(k)(2), 36 CFR 219.27(a)(1)]	55	Sample projects for soil loss. Actual soil movement may sometimes be determined by techniques such as fabric dams. Results reported annually in M&E Report	Periodic or at random	Annual	Moderate	High	Forest hydrologist or soil scientist				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Are temporary roads being 80% re-vegetated within 3 years of contract or permit termination? [36 CFR 219.27(a)(11)]	56	Sample projects during program reviews to determine and document that standard are being met.	Annually	Annual	Moderate	Moderate	Forest Engineer				
15	Are watersheds maintained (and where necessary restored) to provide resilient and stable conditions to support the quality and quantity of water necessary to protect ecological functions and support intended beneficial uses?	Determine adequate instream flow to maintain resilient and stable conditions necessary to protect ecological functions and support intended beneficial uses	57	Select a reasonable sample of streams to determine the instream flows needed to protect stream processes, aquatic and riparian habitats and communities, and recreation and aesthetic values.	Periodic or at random	Annual	Moderate	High	Forest hydrologist				

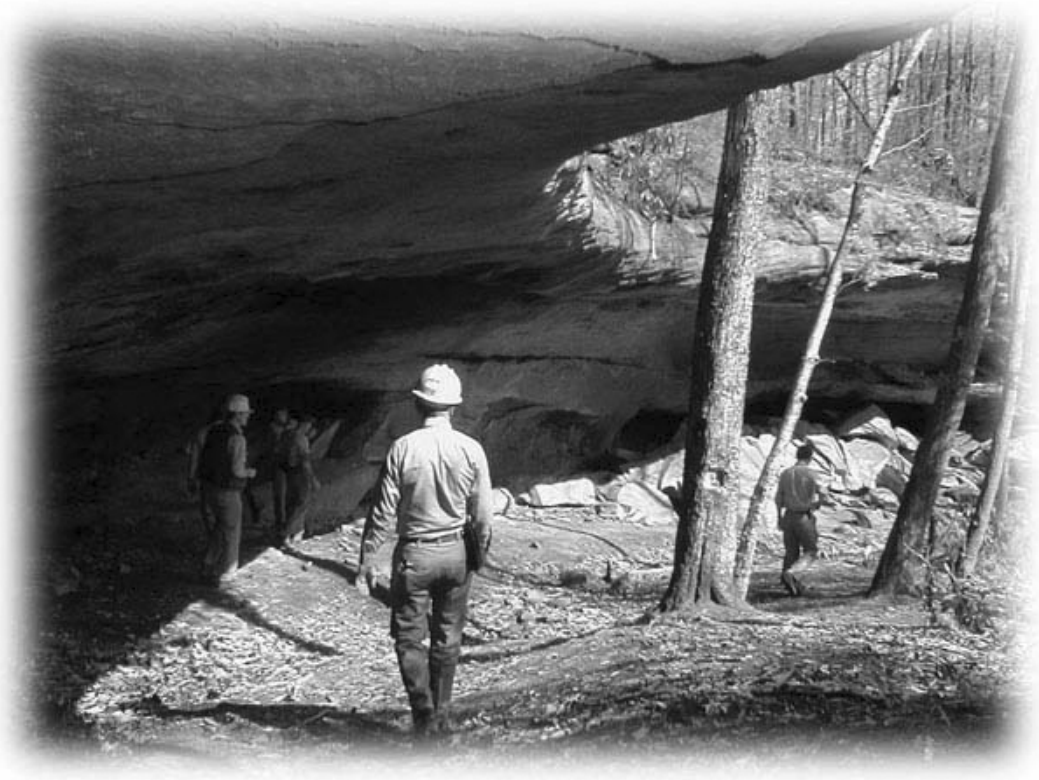
MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Are management strategies in riparian areas adhering to Forest Plan riparian guidelines?	58	Review of project documents and related EAs/EISs for compliance with BMPs and standards. Results reported annually in M&E Report.	Annually - 10%/year of decision notices	Annual	Low	Low	Forest hydrologist				
16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Are riparian areas or corridors providing necessary shade and cover for aquatic habitats?	59	Stream surveys in project areas of shade and cover of aquatic habitats. Measurements taken according to established protocols. Results reported annually in M&E Report.	Continuous	Annual	Moderate	Moderate	Forest fisheries biologist				
16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Are soils in riparian areas being maintained? Is there less than 10% ground disturbance	60	Sample projects during program reviews to determine and document that standard is being met Results reported annually in M&E Report.	Annually	Annual	Moderate	Moderate	Forest soil scientist				
16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Are best management practices being applied in riparian areas? [36 CFR 219.27(a)(4), 36 CFR 219.12(k)(2)]	61	Sample projects during program reviews to determine and document that standard are being met. Field monitoring, according to established protocols, of BMP application in riparian areas of project sites. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest hydrologist or soil scientist				
16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Effects on riparian values, soil and water quality, and & (e) stream bank stability [36 CFR 219.27(a)(4), 36 CFR 219.27(b)(6), 36 CFR 219.27(c)(6)]	62	Sample projects during program reviews to determine and document where riparian values soil and water impacts and steam bank stability is observed. Results reported annually in M&E Report.	Annually	Annual	Moderate	Moderate	Forest hydrologist or soil scientist				
16	What are the conditions and trends of riparian area, wetland and floodplain functions and values?	Wetland maintenance or mitigation during project planning and implementation	63	Review of project EAs/EISs, and Field inspections of project areas. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest hydrologist, biologist or soil scientist				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
17	How do actual outputs and services compare with projected?	Are forest products being produced within predicted ranges? [36 CFR 219.27 (c)(2)]	64	Track trends from annual accomplishments and compare with Forest Plan projections. ASQ will not exceed 1870 MCF over the 10-year period. Total program quantity will range from 2070 MCF to 2530 MCF. Want to also track products offered.	Annually	Annual	Moderate	High	Forest Products Staff				
17	How do actual outputs and services compare with projected?	Trends in demand for mineral resources in relationship to national forest mineral resource availability?	65	Track trends in minerals permits and compare with Forest Plan projections. Track private mineral projects and Federal Applications for Permit to Drill	Annually	Annual	Moderate	High	Forest Lands and Minerals Staff				
17	How do actual outputs and services compare with projected?	Surface occupancy and rights in relation to sub-surface rights. [36 CFR 219.22]	66	Interdisciplinary review of surface occupancy and minerals permits. Account for the projects in the preceding task having analysis work completed by interdisciplinary staff.	Annually	Annual	Moderate	Moderate	Forest Lands and Minerals Staff				
17	How do actual outputs and services compare with projected?	Access to explore and develop mineral resources of domestic compelling significance [36 CFR 219.22]	67	Interdisciplinary review of surface occupancy and minerals permits	Annually	Annual	Moderate	Moderate	Forest Lands and Minerals Staff				
17	How do actual outputs and services compare with projected?	Are roads being maintained, constructed or reconstructed to reduce sediment delivery to water bodies and to provide a transportation system that supplies safe and efficient access for forest users while protecting forest resources. [36 CFR 219.27 (a)(10)]	68	Interdisciplinary review of transportation system. Track miles of National Forest System Roads (NFSR) exist compared to miles maintained to their objective maintenance level. Miles of road improved. Miles of road decommissioned (classified and unclassified).	Annually	Annual	Moderate	High	Engineering Staff				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
17	How do actual outputs and services compare with projected?	Are constructed roads designed according to standards appropriate for the planned uses? [36 CFR 219.27 a (10), 36 CFR 219.27 b (7)]	69	Interdisciplinary review of transportation system.	Annually	Annual	Moderate	High	Engineering Staff				
17	How do actual outputs and services compare with projected?	Are needed transportation corridors designated to established standards? [36 CFR 219.27 a (9)]	70	Interdisciplinary review of Roads Analysis Process accomplishments	Annually	Annual	Moderate	Moderate	Engineering Staff				
17	How do actual outputs and services compare with projected?	How do estimated and actual costs of plan implementation compare? [36 CFR 219.12(k) 3]	71	Compare trends in operating budgets to the estimated costs of implementing the Forest Plan	Annually	Annual	Moderate	High	Forest Planning Staff				
18	Are silvicultural requirements of the Forest Plan being met?	Are lands being adequately restocked within 5 years of regeneration treatments? [36 CFR 219.27(c)(3)]	72	Track reforestation reports 95% of stands adequately stocked after 5 years	Annually	Annual	Moderate	High	Forest Silviculturist				
18	Are silvicultural requirements of the Forest Plan being met?	Are lands not suited for timber production classified as such? [36 CFR 219.12(k) 5(ii)]	73	Review suitability using Spectrum	5 Years	5 Years	Moderate	High	Forest Planning Staff				
18	Are silvicultural requirements of the Forest Plan being met?	Have lands identified as not suitable for timber production become suitable? [36 CFR 219.14 (a)(d), 36 CFR 219.27(c)(1)]	74	Review suitability using Spectrum	5 Years	5 Years	Moderate	High	Forest Planning Staff				
18	Are silvicultural requirements of the Forest Plan being met?	Are harvest unit sizes within the allowable limits? [36 CFR 219.27(d)(2)	75	Review harvest reports in STARS	Annually	Annual	Moderate	Moderate	Forest Products Staff				
18	Are silvicultural requirements of the Forest Plan being met?	Should maximum harvest unit size limits be continued? [36 CFR 219.12(k)(5)(iii)	76	Interdisciplinary review	5 Years	5 Years	Moderate	Moderate	Forest Planning Staff				
18	Are silvicultural requirements of the Forest Plan being met?	Are silvicultural practices in compliance with Forest Plans? [36 CFR 219.27(c)]	77	Interdisciplinary review of practices in the field	Annually	Annual	Moderate	High	Forest Planning Staff				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
18	Are silvicultural requirements of the Forest Plan being met?	Are appropriate harvest methods used on the Forest? [36 CFR 219.27]	78	Interdisciplinary review of harvest units in the field	Annually	Annual	Moderate	High	Forest Planning Staff				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Are project plans and environmental analyses for projects effectively and consistently implementing objectives and standards (including state BMPs)?	79	Interdisciplinary review. Sample project activities related to BMPs to for implementation of standards and BMPs. Review project documents and related EAs/EISs for compliance with standards and BMPs. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest Planning Staff				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Is vegetation being managed according to requirements and making progress toward achievement of DFC for vegetation? [36 CFR 219.15, 36 CFR 219.27]	80	Interdisciplinary review. Sample vegetation management projects to compare vegetation conditions with the Plan DFC. Review project documents and related EAs/EISs for consistency with the Forest Plan. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest Planning Staff				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Evaluate how diversity is affected by planned activities and whether expected results are being achieved. [36 CFR 219.26, 36 CFR 219.27 g, 36 CFR 219.27 (a)(5)]	81	Interdisciplinary review. Sample projects to observe effects on diversity. Review project documents and related EAs/EISs and BEs. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest Planning Staff with input from all disciplines				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Determine whether standards, guidelines, and management requirements are being met and are effective in achieving expected results. [36 CFR 219.27 (a)(6)]	82	Interdisciplinary review. Sample projects to observe effectiveness of implemented standards. Results reported annually in M&E Report.	Annually	Annual	Moderate	High	Forest Planning Staff with input from all disciplines				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Determine when changes in GPRA, policies, or other direction would have significant effects on Forest Plans. [36 CFR 219.10(g)]	83	Interdisciplinary review of Forest Plan in relation to agency policy and direction.	Annually	Annual	Moderate	Moderate	Forest Planning Staff				

MQ #	Monitoring Question	Element	Task #	Method of Collection	Duration/ Frequency	Reporting Interval	Needed Precision	Needed Reliability	Responsibility	Cost	Goal #	Obj. #	Stand. #
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Determine if planning information or physical conditions have changed. [36 CFR 219.10(g)]	84	Interdisciplinary review of Forest Plan for needed changes as new information becomes available and/or significant changes in conditions are observed.	As needed	Annual	Moderate	Moderate	Forest Planning Staff with input from all disciplines				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Identify changes in ability of the planning area to supply goods and services in response to society's demands. [36 CFR 219.10(g), 36 CFR 219.21(a)(2)]	85	Interdisciplinary review of Forest Plan for needed changes as new information becomes available and/or significant changes in conditions are observed.	As needed	Annual	Moderate	Moderate	Forest Planning Staff				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	Determine effects on NF management from management activities on nearby land. [36 CFR 219.7(f)]	86	Interdisciplinary review of Forest Plan for needed changes as changed conditions on nearby lands are observed.	As needed	Annual	Moderate	Moderate	Forest Planning Staff				
19	Are Forest Plan objectives and standards being applied and accomplishing their intended purpose?	During monitoring determine research needs. [36 CFR 219.28]	87	Interdisciplinary review of Forest Plan for information needs requiring scientific investigation.	Annually	Annual	Moderate	Moderate	Forest Planning Staff with input from all disciplines				



Forest Service personnel inspect archeological site in a rockshelter on the Stanton Ranger District.

Appendix E

RESEARCH NEEDS

1. Determine whether the cliffline prescription area is appropriate to maintain desired microclimate and hydrologic conditions.
2. Earlier work with white-haired goldenrod indicated that the species might be suffering from genetic depression. Work to determine genetic changes following controlled crosses is needed to see if such crosses would benefit the species without genetic loss.
3. Vegetation response to regular prescribed fire is needed to help managers make better decisions for actions on the ground.
4. The response and potential control or encouragement of invasive non-native weeds following increased use of prescribed burning is needed.
5. Determine the effect of forest overstory management and prescribed burning on the incidence of use of treated areas by Indiana bats.
6. Determine regional relationships between stream discharge, basin drainage area and stream channel geometry in the Licking and Kentucky basins.
7. Determine historical pre-European distribution of yellow pine forest types on the escarpment.
8. Determine forest community change throughout the Holocene.
9. Determine the distribution of various age classes and vegetative types and determine which age classes or vegetative types may be lacking but needed for certain bird life history requirements.
10. Develop treatments to protect forest from devastating introduced insects and diseases, particularly oak decline (including gypsy moth defoliation induced as a special case), and hemlock woolly adelgid.
11. Determine rates of nest predation and parasitism by the brown-headed cowbird in various habitats and management regimes.
12. Determine how best to use fire to regenerate and initiate stands of oak-pine and pine-oak.
13. Determine how best to regenerate and maintain uneven-age (multi-age) stands of various native forest types.
14. Determine seasonal movement of blackside dace.
15. Determine the life history of duskytail darter.
16. Determine minimum viability of all species on the forest.
17. Determine the life history of PETS mussel species.
18. Determine the feasibility of artificial reproduction of the mussels specifically Pegias, Villosa, and Alasmodonta.
19. Determine the effects of sediment and sedimentation on aquatic insects, fish and mussels.
20. Determine the effects of soil compaction and trampling on archeological deposits in rockshelters.

Red River, Stanton Ranger District.

Appendix F

MONITORING AND IMPLEMENTATION FOR THE RED RIVER WILD AND SCENIC RIVER

MONITORING PROGRAM

INTRODUCTION

The Red River monitoring program has three purposes: to determine how well we are moving toward the desired future condition described in the Forest Plan (Chapter 3); to help us understand how management of the river corridor is affecting the Outstandingly Remarkable Values of the Red River; and to help identify the conditions needing corrective actions to protect and enhance river values. The water quality of the Red River and its outstandingly remarkable values identified in the Affected Environment of the Forest Plan EIS (Chapter 3) are the focus of this monitoring program.

This monitoring plan prescribes two scales of monitoring--monitoring of long-term trends and monitoring the effectiveness of specific activities. The accomplishment of any monitoring project is dependent upon budgets and national, regional, or local allocations of resources.

Long-term trend monitoring will focus on the outstandingly remarkable values, which the Plan is designed to protect and enhance. The purpose of this level of monitoring is to determine whether the resource conditions in the river corridor as a whole are improving, remaining the same, or declining over time.

The second scale focuses on project or activity level monitoring. At this scale, data is gathered and collated on the effectiveness of particular activities in attaining more specific resource conditions.

MONITORING GUIDANCE FOR THE RIVER VALUES

For water quality and each outstandingly remarkable value, this section provides general direction for what to monitor for long-term trends and for specific activities by identifying the broad monitoring objectives. Suggestions are also made for specific monitoring methods and frequency. These lists are suggestions and are not comprehensive. Monitoring techniques change and newer methods may often be both more accurate and more economical. Any methods that will adequately answer the monitoring questions may be used. Professional judgment will be used to determine monitoring frequency and methodology that is appropriate to the scope of the issues and environmental conditions.

This monitoring program incorporates data collection that is already in place or part of a continuing base program. These programs are noted in the following tables with a single asterisk (*). New monitoring activities must be funded through project-specific sources or by adding to an existing program. New monitoring activities are noted with a double asterisk (**). New monitoring activities will be added only if funding or other sources become available.

Water Quality

Monitoring Element	Purpose	Suggested Methodology and Frequency	Responsible Agency or Agencies
Long-term Trend Monitoring			
Critical water quality parameters (dissolved oxygen, pH, turbidity, temperature, suspended solids)	To determine trends resulting from management activities, or other changes within the river corridor *	See Forest Plan Monitoring.	USFS
Activity Level Monitoring			
Turbidity	To determine project effects on stream quality.*	See Forest Plan Monitoring.	USFS

Scenic, Geologic and Recreational Values

Monitoring Element	Purpose of Monitoring	Suggested Methodology and Frequency	Responsible Agency or Agencies
Quality of Recreational Experience	To determine whether users are enjoying a quality recreational experience.**	User surveys and informal interviews conducted periodically. Includes National Recreational User Survey done every five years.	USFS
Total Use Levels	To determine whether use levels are in conformance with ROS objectives.**	Gather recreation use data every five years or more often if observed use indicates. Methods could include pass counts, envelope counts, parking lot surveys, trail and road surveys with infra red or pneumatic counters.	USFS

Historic and Cultural Values

Monitoring Element	Purpose of Monitoring	Suggested Methodology and Frequency	Responsible Agency or Agencies
Cultural and Historic Sites	To determine the extent to which cultural sites are affected by management activities.*	See Forest Plan Monitoring	USFS

Botanical, Faunal and Aquatic Values

Monitoring Element	Purpose of Monitoring	Suggested Methodology and Frequency	Responsible Agency or Agencies
Long-term Trends			
Vegetative Condition	To determine changes in white-haired goldenrod sites.**	Annual surveys of known sites to determine status of populations	USFS
	To determine changes in amount and condition of riparian vegetation. **	Aerial photo comparisons; dispersed site survey comparisons over time--every five years	USFS
	To determine changes in upland vegetation*	Silvicultural stand examinations; aerial photo comparisons--every 10 years	USFS
Wildlife Populations	To determine changes in hibernating bat populations.**	Bi-annual	USFS and KDFWR
	To determine changes in populations of management indicator species. **	See Forest Plan Monitoring	USFS
Fish Habitat Conditions	To determine changes in fish habitat and hydrological features (pools, riffles, channel width/depth) **	Stream survey of Upper Red River using standard protocols, every 10 years at a minimum, or more frequent if major habitat changes occur.	USFS and KDFWR
Activity Level			
Vegetative Condition	To determine effects of management and restoration activities on the amount and condition of riparian vegetation**	Survey samples of road, trails and dispersed campsite closures.	USFS
Wildlife populations	To determine whether management indicator species and PETS species are in project area and whether species' use of area is protected**	Survey according to established protocols; pre-project to identify species using area and post-project to see if use changes.	USFS
Changes in channel morphology and hydrologic conditions	To determine the effectiveness of fish habitat projects (e.g., coarse woody debris and boulder placement.)**	Pre and post project cross-sectional sampling in project area. At five-year intervals stream survey specific to project objectives.	USFS and KDFWR
Fish populations	To determine the effectiveness of fish habitat projects**	Fish counts, snorkeling, electroshocking. Once every 5 years.	USFS and KDFWR

ACTIVITY MONITORING

Activity monitoring can be done at various intensities, but would generally involve four steps. The first is to collect relevant baseline data to determine what the condition is before undertaking activities. Much of this data may have already been collected. It provides the answer to the question, "What was the condition of the resource before any actions were taken?"

The second step is to verify that projects were carried out as planned. This second step is known as *implementation monitoring*. It should answer the question, "Were projects done in the manner intended?"

When we know baseline conditions, and have confirmed that projects took place as planned, we can then assess whether the results and effects were what we anticipated. This third step is *effectiveness monitoring*. It asks the questions, "What's happening as a result of our activities: Were the activities effective in accomplishing the activity objectives? (Long-term monitoring determines if projects are successful in meeting overall plan goals.) Are the activities as a whole effective?" Although some individual projects may need effectiveness monitoring, generally effectiveness monitoring would be performed on a sampling basis, rather than project by project.

If projects are not achieving anticipated results, the next step is to re-examine the assumptions and logic that went into planning, design, and implementation. This fourth step, called *validation monitoring*, allows us to identify whether there is a need for change in overall direction in planning, designing or carrying out activities. Validation monitoring asks the question, "Is there anything we should do differently in managing the river corridor?" The answer may be as specific as changing an implementation technique or standard, or as broad as changing an overall goal for the river corridor. Validation monitoring is also applied at a broader scale, and is used to periodically reexamine the broader goals and objectives for the Red River Wild and Scenic River to verify whether they are still relevant and appropriate.

To summarize, the general sequence when monitoring any activity, or set of activities, is:

1) Collect relevant baseline data before the activity.
2) Do implementation monitoring to verify activities were carried out as designed.
3) Do effectiveness monitoring to assess results.
4) If results are different from those desired, conduct validation monitoring to assess whether a change in management direction is needed. Also, periodically assess direction and assumptions for the Red River Wild and Scenic River to evaluate whether they need to be changed.

SUGGESTED CONTENT OF ACTIVITY MONITORING

The project or activity file for each activity may contain**:**

1) Documentation showing the project's consistency with the intent and direction of the Red River Wild and Scenic River goals and objectives. (This is provided in the environmental documents for the project).
2) An implementation checklist, to be completed by the time the project is done. The checklist will be based on standards and guidelines or other direction applicable to the project or activity.

3) A monitoring strategy for the project, including:
    a) A list of elements of the project that are important to monitor in light of planning issues identified for the project. Include specific descriptions of what *implementation monitoring* and, if appropriate, *effectiveness* monitoring that is needed and how it would be done. Monitoring may range from informal observations like "walk-through", to quantified statistical sampling. For implementation monitoring, methods should answer the question, "Were the project plans followed?" For effectiveness monitoring, methods should answer the question, " Was the management activity *effective* in accomplishing the stated objectives?" In the case of routine projects, effectiveness monitoring should be done on a sampling basis.
    b) A description of what additional baseline data, if any, would be collected to accomplish this monitoring.
    c) A schedule for completion of the monitoring activities. In many instances it may be possible to coordinate implementation and effectiveness monitoring activities.

When the project has been completed, monitoring should be done as directed in the project file and within the time frames specified. As a minimum, monitoring documentation should include a short narrative assessing to what extent implementation was completed as planned. If implementation was not as expected and/or the project was not effective in achieving the desired results, follow-up measures would be prescribed at this time.

IMPLEMENTATION PRIORITIES

INTRODUCTION

The Red Wild and Scenic River lays within a designated Wilderness and the Red River Gorge National Natural Landmark and Geological Area, which have provided, and continue to provide, much protection from adverse impacts. However, there are actions within the designated corridor that could be taken to further protect or enhance the Red River from possible adverse impacts. This section describes the process for implementing probable actions that would most likely be needed to achieve the desired future condition as described in the Forest Plan EIS. Probable actions are called "probable" because their actual accomplishment is dependent upon budgetary and resource allocation limitations. These probable actions are grouped according to the outstandingly remarkable values the action was intended to protect or enhance.

In the following section, the probable actions have been categorized and, where possible, relative priorities of actions have been developed within those categories. Individual categories of action have been identified according to water quality and the outstandingly remarkable values and do not necessarily reflect a priority of action of one category over another, nor do they reflect a relative priority of one outstandingly remarkable value over another. Additionally, funds and resources will affect the order in which certain projects are undertaken. For instance, a fishery project, which may be funded by a state or private partner, may be accomplished before a project to rehabilitate dispersed campsites, a project which may be funded solely with funds allocated through our agency.

Before any site-specific actions are implemented, they may require additional analysis and decision making pursuant to the National Environmental Policy Act (NEPA). No site-specific analysis is

presented here. It should also be noted that this list of probable actions may not be comprehensive, nor does it represent all possibilities of proposals that could occur. As the river corridor changes due to changes in use or disturbances such as flooding or wildland fires, new actions may be needed to protect or enhance the outstandingly remarkable values.

ACTION PRIORITIES

These actions would be carried out within the Wild and Scenic River corridor for the protection or enhancement of the Red River's free-flowing condition, water quality and outstandingly remarkable values. There are also some actions to be implemented that may be outside the corridor. [Also, see actions in Upper Red River Hydrologic Condition Analysis (Walker 2001b)].

WATER QUALITY

Categories of Action:

1) Actions that would reduce or eliminate active sources of stream sedimentation and improve stream bank stability consistent with the natural changes in the river system.
2) Actions that would alter in stream dynamics of depositions and scouring to move closer to natural system dynamics.
3) Actions that would reduce or eliminate active sources of chemical pollution.

Category	Actions	River Segment in Order of Priority
1	• Close and rehabilitate undesignated parking and camping within, or affecting, the riparian area.	• Recreational, Wild (camping)
	• Partner with the State to upgrade roadsides and culverts.	• Recreational
	• Rehabilitate eroding roadside embankments that are negatively affecting water quality.	• Recreational
	• Close user developed roads and trails that are judged to be adversely affecting water quality.	• Wild (trails), Recreational
	• Improve canoe launch sites (near Hwy 746, Hwy 715, Sheltowee Trace National Recreation Trail) through hardening, retaining walls and/or revegetation.	• Wild, Recreational
2	• Coarse woody debris placement (see #1 of Botanical and Aquatic Values)	• Recreational
3	• Inventory and plug abandoned oil wells.	• Wild, Recreational
	• Inventory locations of trash dumping sites. Partner with private and governmental groups to clean up trash within the river and riparian area.	

SCENIC, GEOLOGIC AND RECREATIONAL VALUES

Categories of Action:

1) Actions that would protect public health and safety.
2) Actions that would add to, or improve existing sites or site access to respond to resource needs.
3) Actions that would perpetuate desired long-term scenic quality.

Category	Actions	Segment in Order of Priority
1	• Work with upstream cities and State to improve sewage input problems if they arise. • Reduce potential chemical input from trash dumping and abandoned oil wells (see #3 Water Quality).	• Wild, Recreational • Wild, Recreational
2	• Dispersed sites (see #1 Water Quality) • User developed trails (see #1 Water Quality) • Canoe Launch Sites (see #1 Water Quality) • Designate dispersed camping sites in the recreational portion of the river. • Improve signage at canoe launch sites and trail access points to inform public of proper etiquette in corridor. • Maintain existing level of limited parking and access to river corridor to minimize over-crowding and protect sensitive resources.	• Wild, Recreational • Wild, Recreational • Recreational, Wild • Recreational, Wild • Recreational, Wild • Wild, Recreational
3	• Screen the Gladie Cultural-Environmental Learning Center from view of river boaters. • Work with Red River Gorge Climber's Coalition to minimize possible visual impacts of climbing (chalk, bolts) as viewed from the Red River.	• Recreational • Wild, Recreational

HISTORIC AND CULTURAL VALUES

Categories of Action:

1) Actions that would ensure protection of heritage resources with recreational use management or other project activities.
2) Actions that would further scientific knowledge or public education of heritage resources.

Category	Actions	Segment in Order of Priority
1	• Inventory/data recovery will occur as part of site-specific projects. • Recreational use found to be damaging sites would require the sites to be closed or damage mitigated. • Increase backcountry ranger patrols.	• Recreational, Wild N/A • Wild, Recreational • Wild, Recreational
2	• Historic and Cultural importance of Red River Gorge will be highlighted through interpretive materials and activities at Gladie Visitor Center and at designated recreation sites and/or trailheads.	• Recreational, Wild

BOTANICAL AND AQUATIC VALUES

Categories of Action:

1) Actions that would restore in-stream habitat conditions where the condition has been most altered from natural conditions.
2) Long-term actions that would protect and enhance riparian habitat and prevent negative impacts to PETS species.
3) Actions that would inhibit, or prevent non-native species from entering, or expanding, their range in the river corridor.

Category	Actions	Segment in Order of Priority
1	• Concentrate efforts to add coarse woody debris (LWD) in tributaries, not in the main stem of Red River (inventory LWD in lower Gladie Creek)	• Recreational
2	• Undesignated parking and camping (See #1 of Water Quality)	• Recreational, Wild (camping)
3	• Control non-native invasive species • Remove invasive vegetation	• Recreational, Wild • Recreational, Wild

Wake robin, a native wildflower, thrives in the mesic forests of eastern Kentucky.

Appendix G

MAPS

Table of Maps

The following maps are intended to provide the reader with a broad point of reference. These maps are not intended to provide detail sufficient to locate specific points of interest. The first map shows where the Daniel Boone National Forest (DBNF) occurs within Kentucky. The second map shows the proximity of some of the larger cities to the DBNF. The third map shows the counties that lie within the DBNF proclamation boundary as well as those in close proximity. The remaining maps are of individual Prescription Areas. The Prescription Area maps are not of a scale that can be used to locate specific areas of interest. Rather, the Prescription Area maps show their relative size and distribution across the DBNF. Not all Prescription Areas are mapped. The Significant Bat Cave Prescription Area was not mapped because precise locations are not available and because of the sensitivity of these locations. This Prescription Area occurs based on description. Readers should be aware that some Prescriptions Areas overlap. These maps were prepared using the Forest's corporate Geographic Information System database.

Disclaimer:

> The Forest Service uses the most current and complete data available. Geographic Information System (GIS) data and product accuracy may vary. For example, products may be developed from sources of differing accuracy, accurate only at certain scales based on modeling or interpretation, incomplete while being created or revised. Using GIS products for purposes other than those for which they were created may yield inaccurate or misleading results. The Forest Service reserves the right to correct, update, modify, or replace GIS products without notification. For more information, contact the Daniel Boone National Forest, 1700 Bypass Road, Winchester, KY 40391, (859) 745-3100.

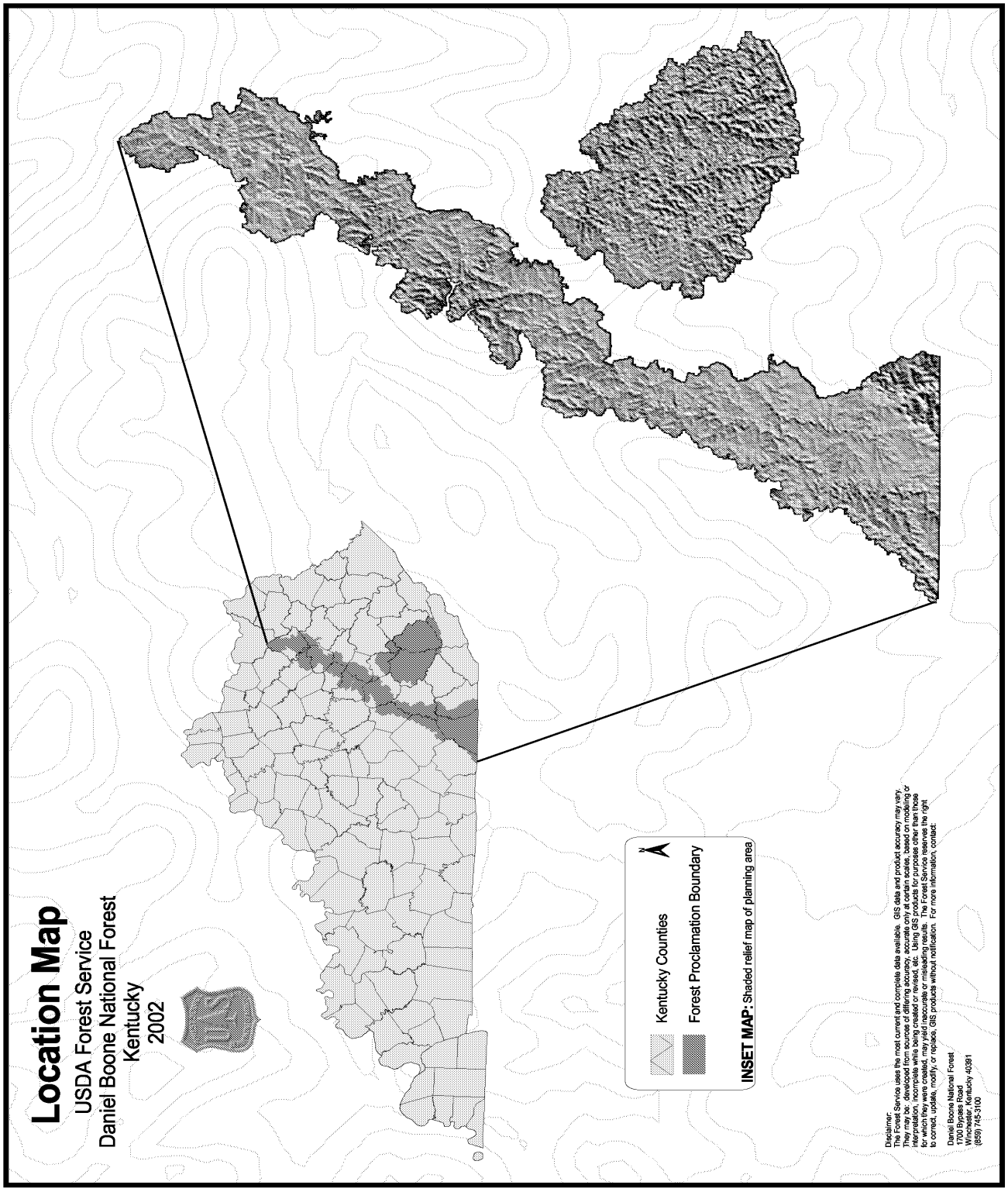


Figure G - 1. Daniel Boone National Forest Vicinity Map/Proclamation Boundary.

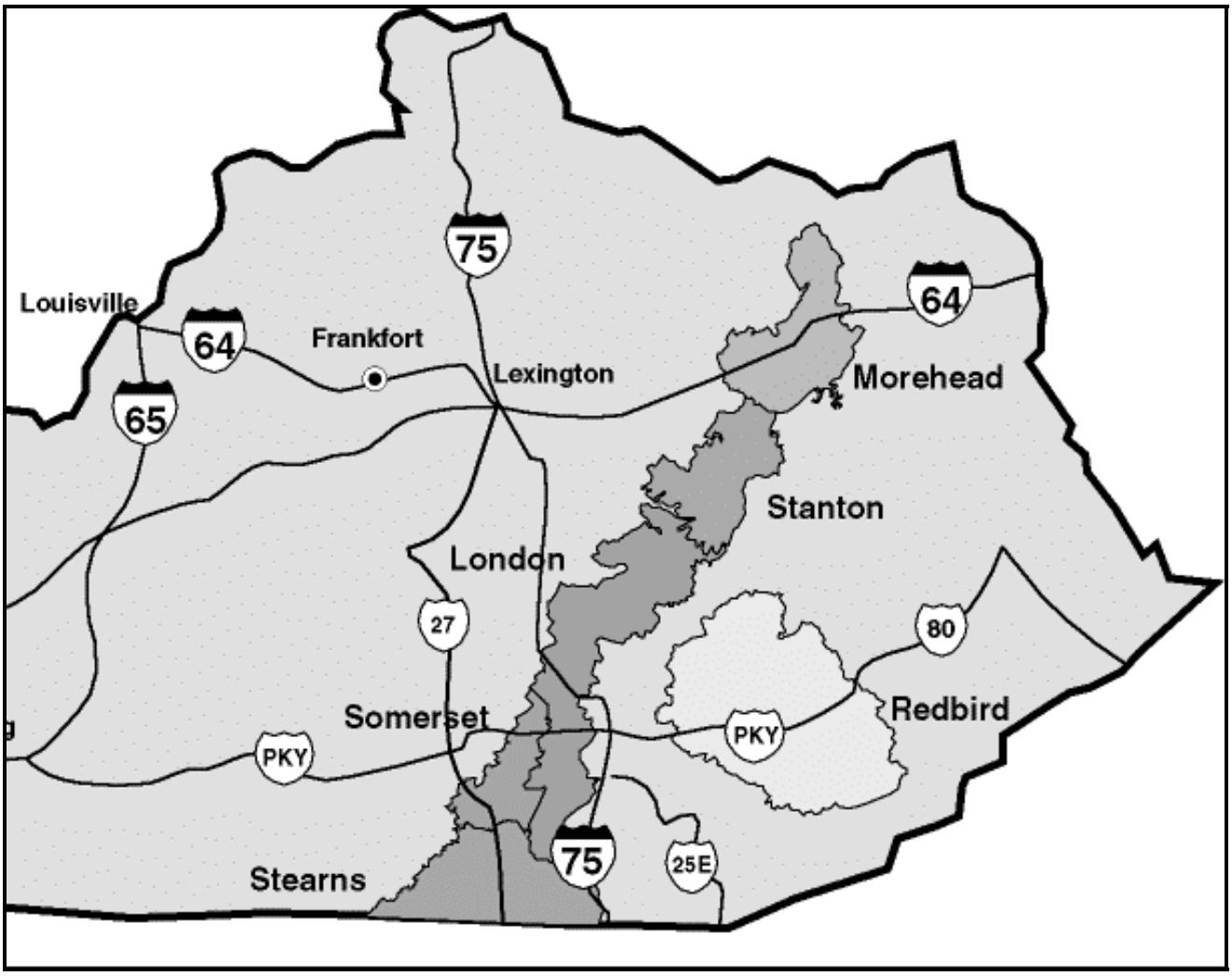


Figure G - 2. Map with Major Cities and Ranger Districts.

Figure G - 3. Counties in Daniel Boone National Forest vicinity.

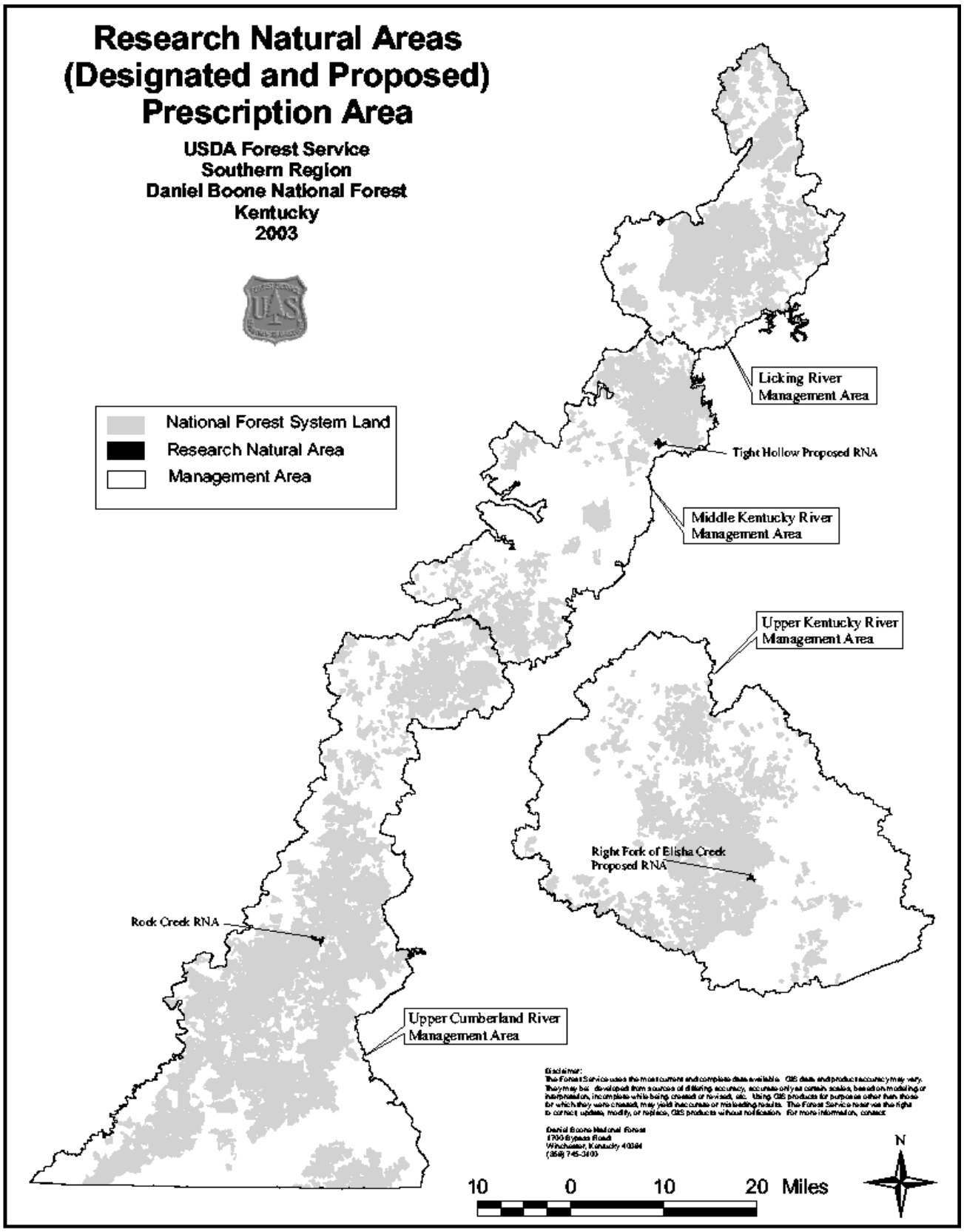


Figure G - 4. Research Natural Areas.

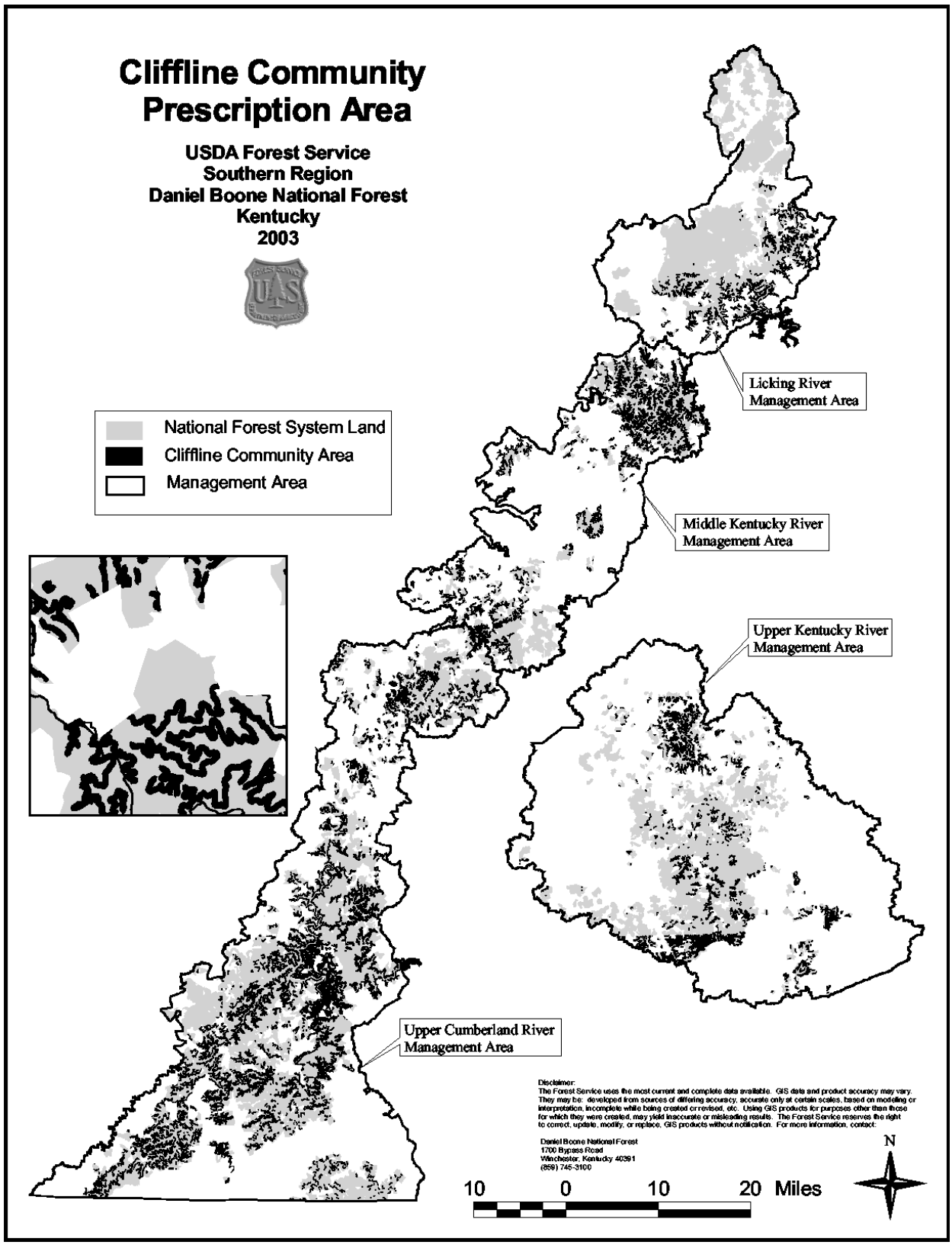


Figure G - 5. Cliffline Community.

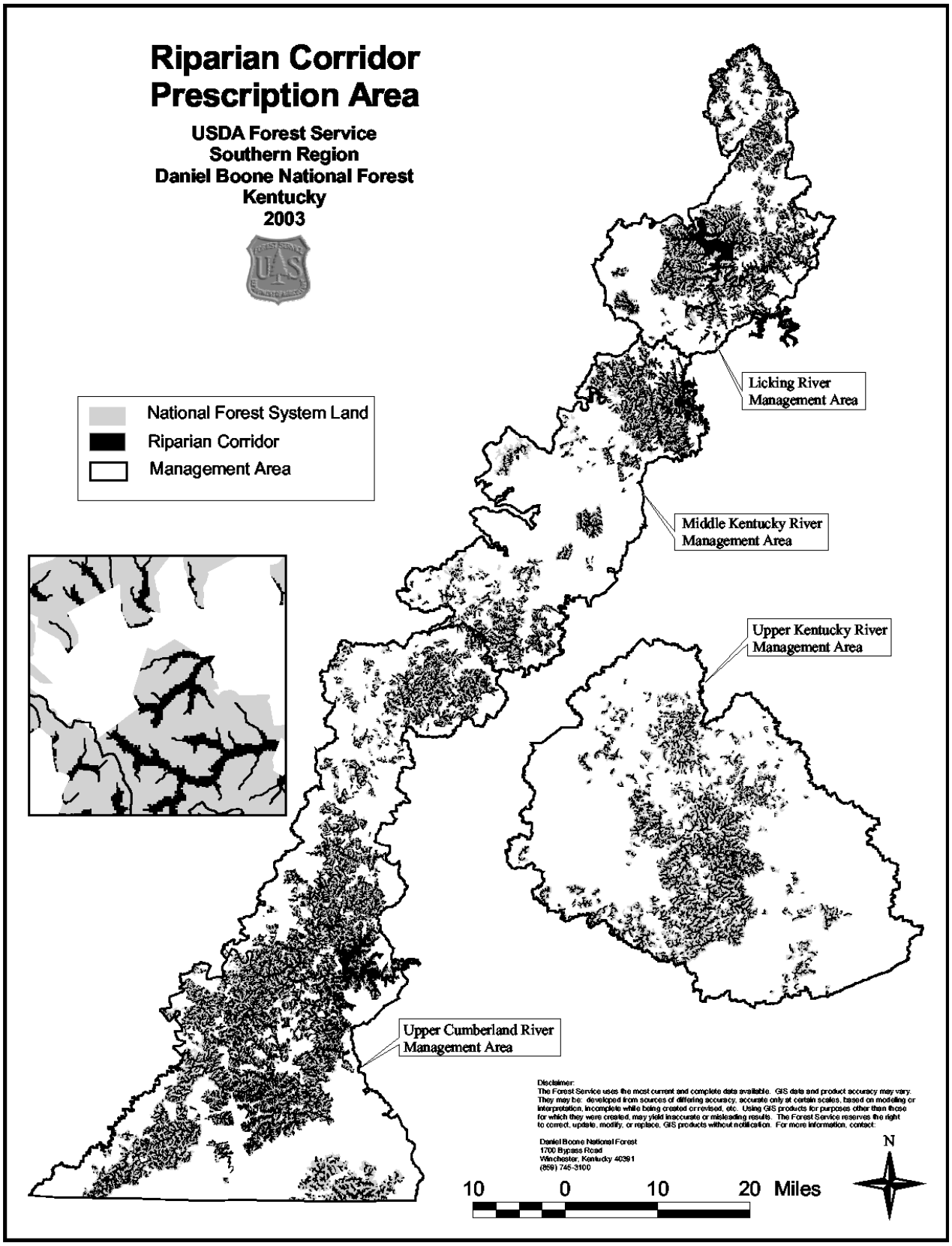


Figure G - 6. Riparian Corridor.

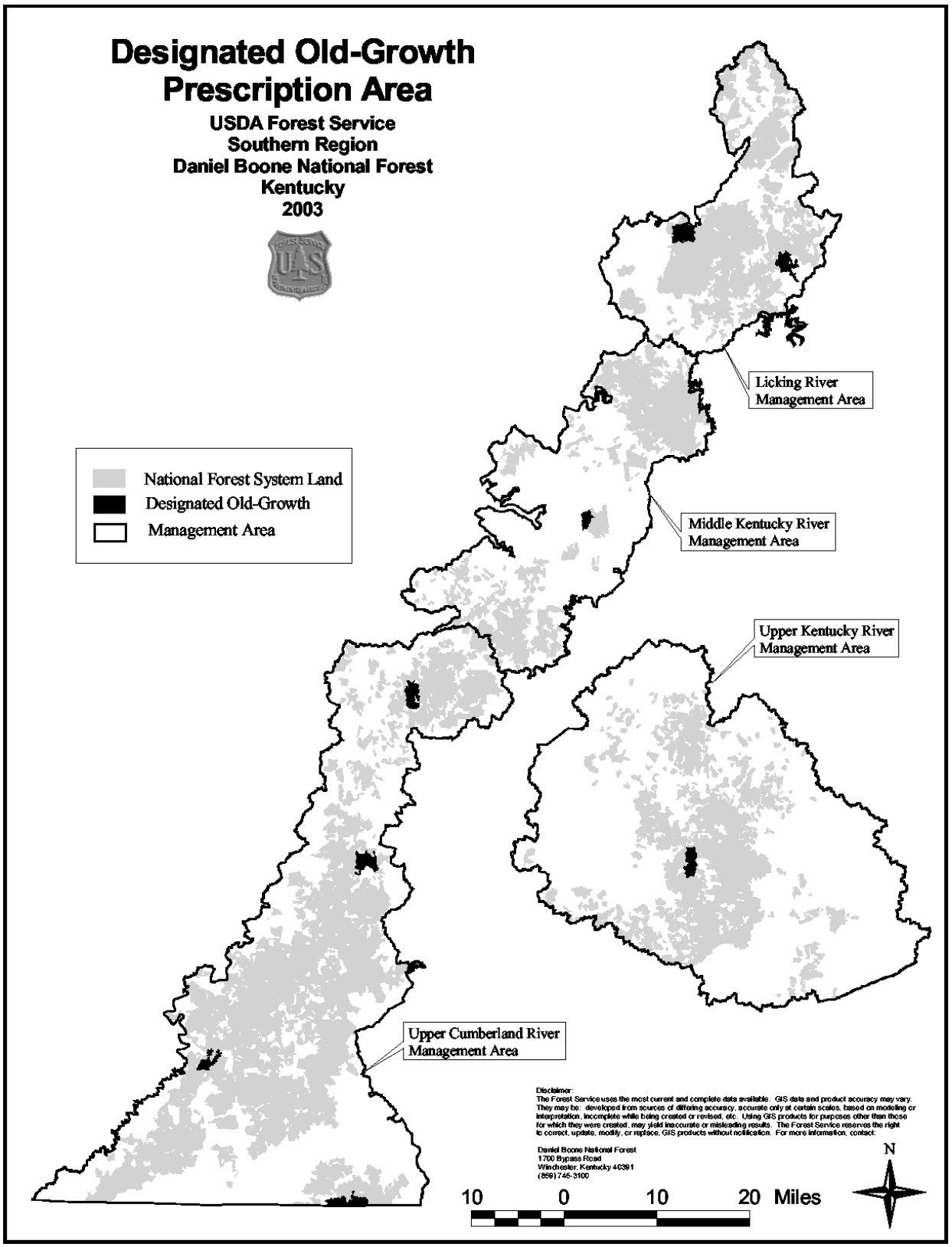


Figure G - 7. Designated Old-Growth.

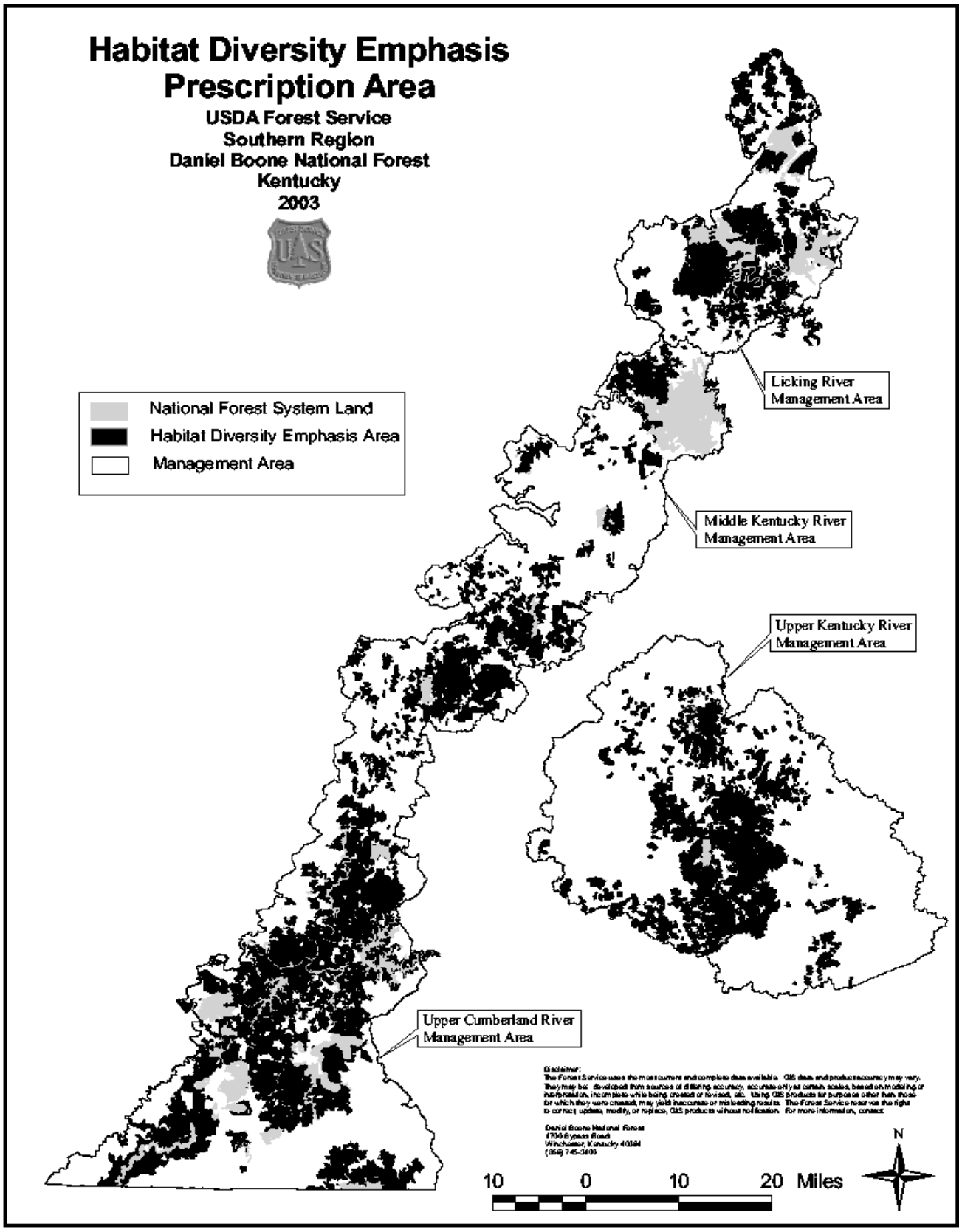


Figure G - 8. Habitat Diversity Emphasis.

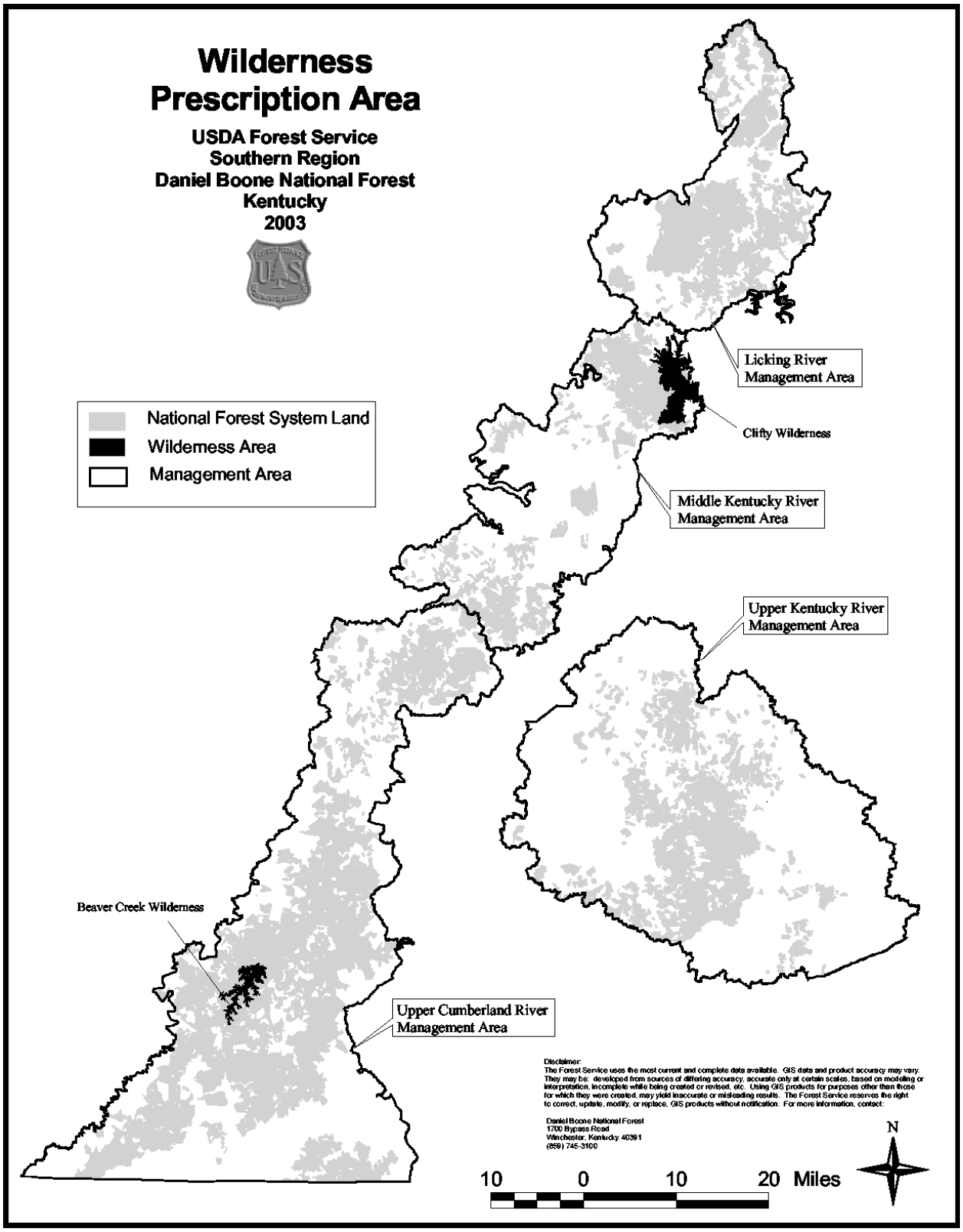


Figure G - 9. Wilderness.

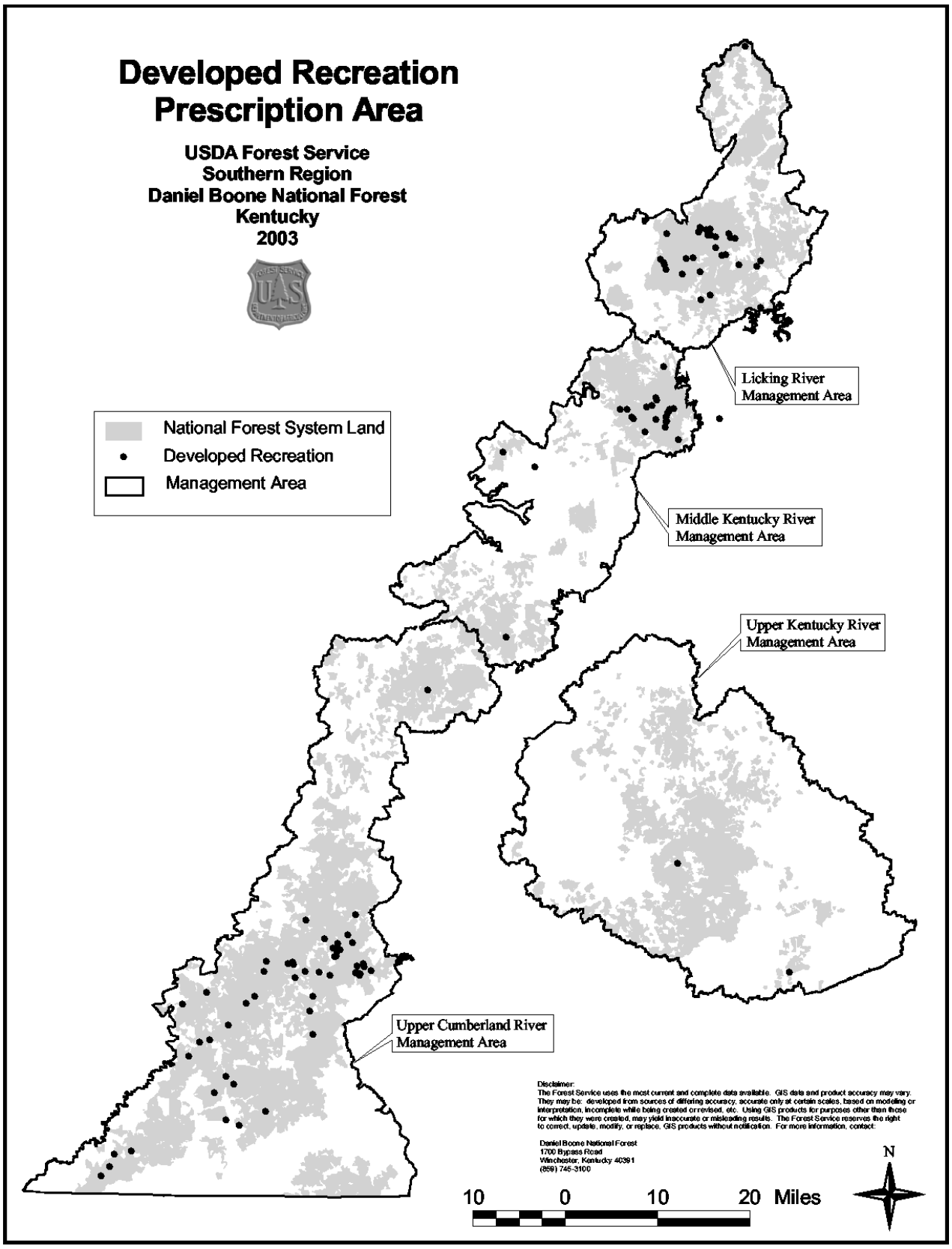


Figure G - 10. Developed Recreation.

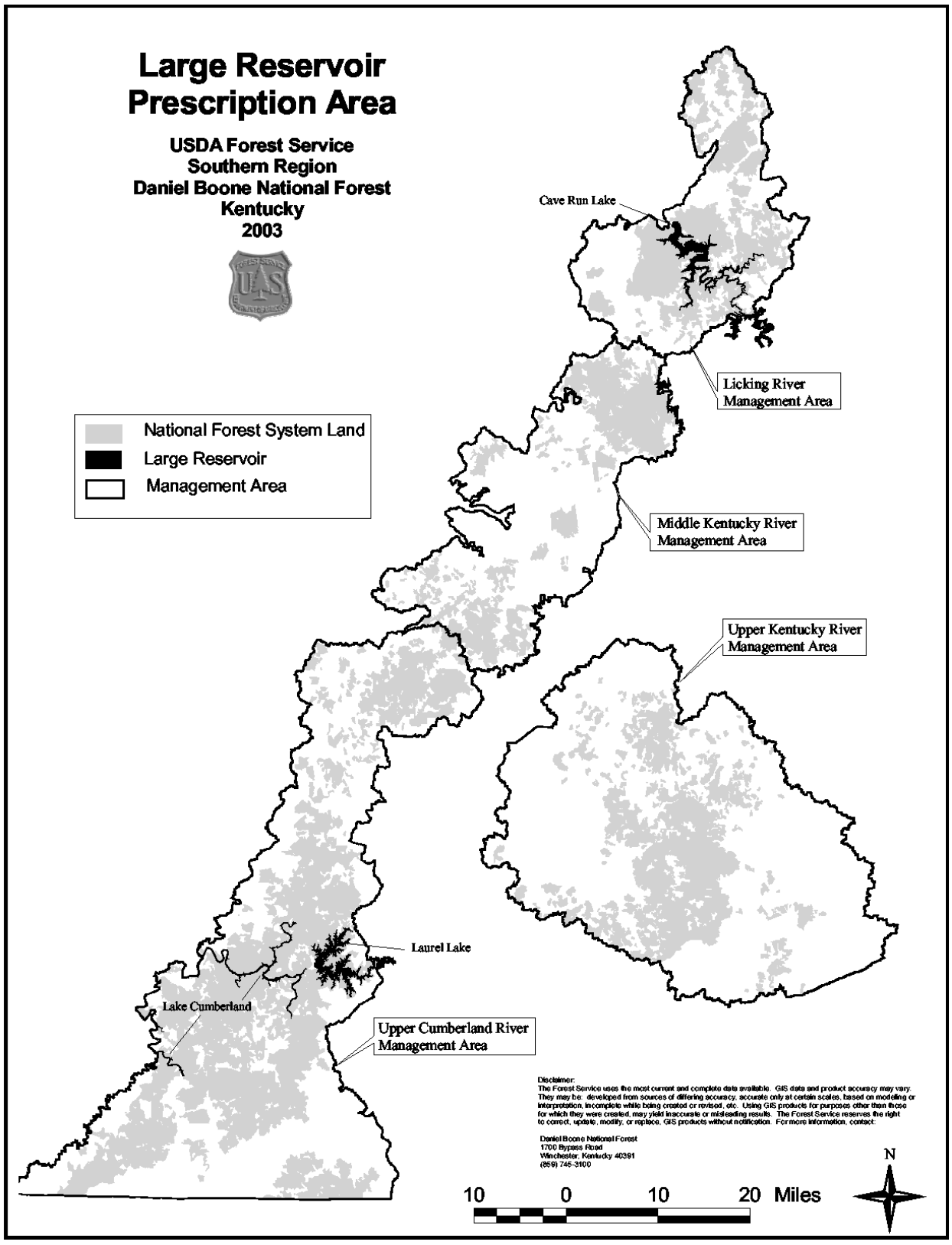


Figure G - 11. Large Reservoir.

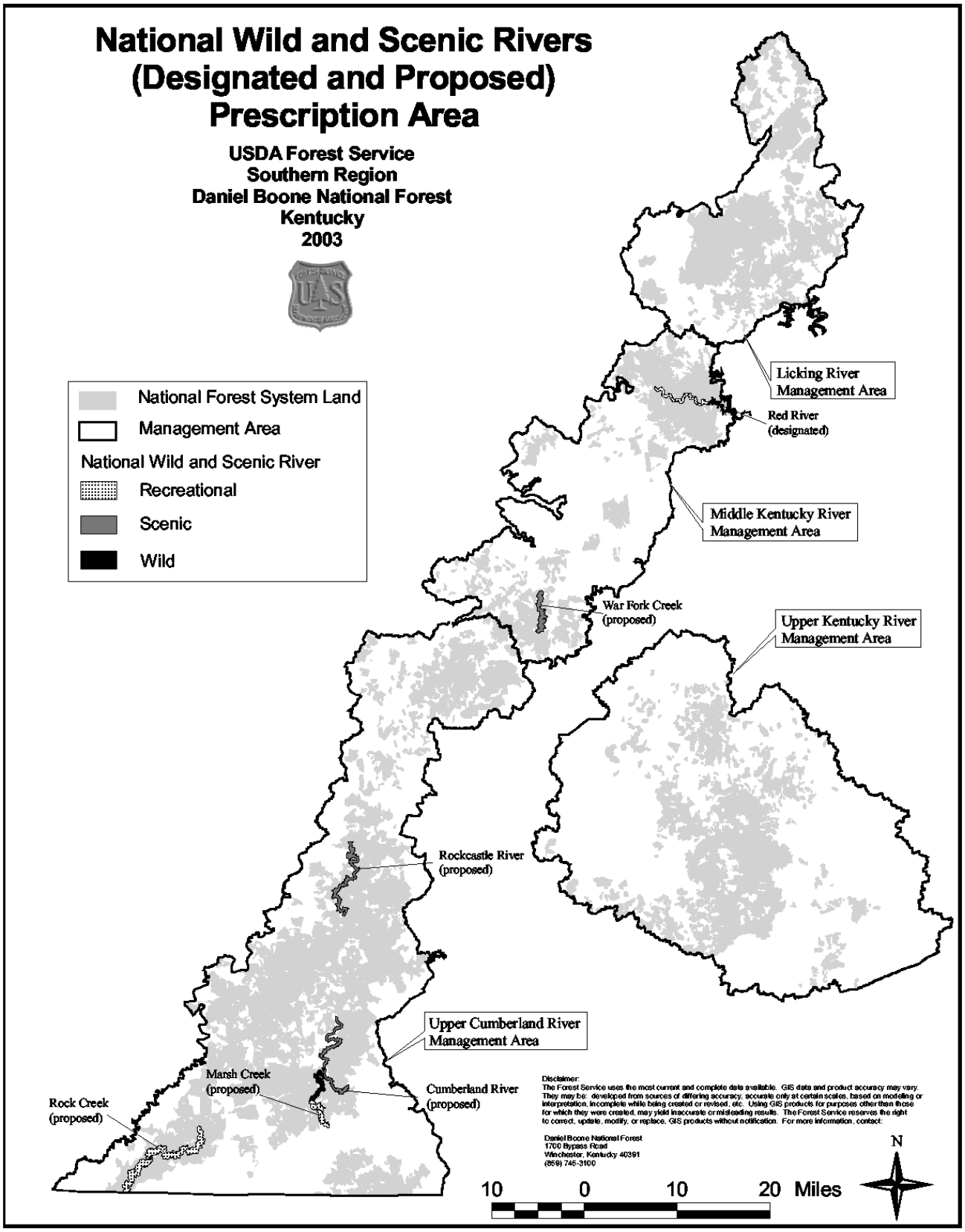


Figure G - 12. National Wild and Scenic River – Designated and Proposed.

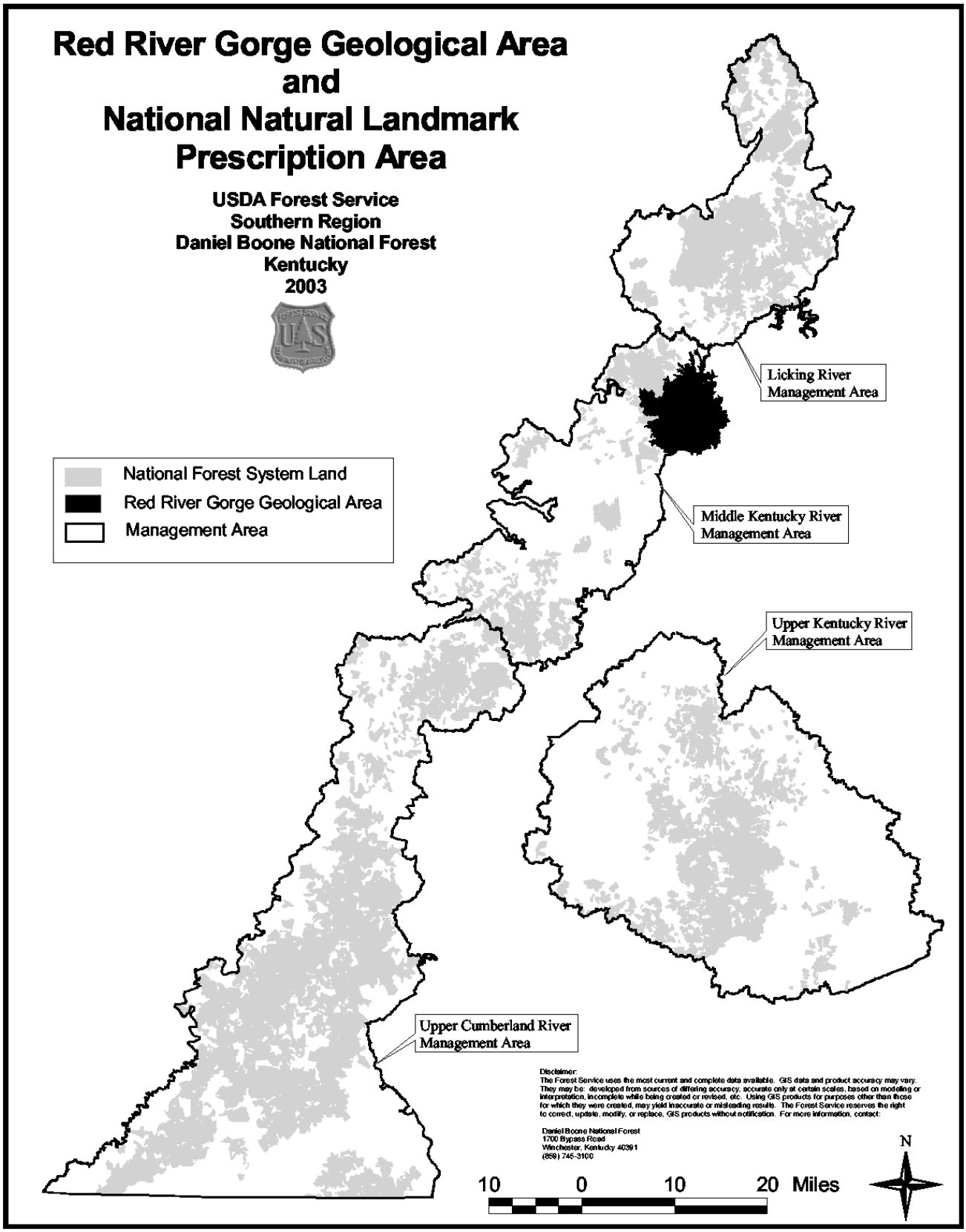


Figure G - 13. Red River Gorge Geological Area.

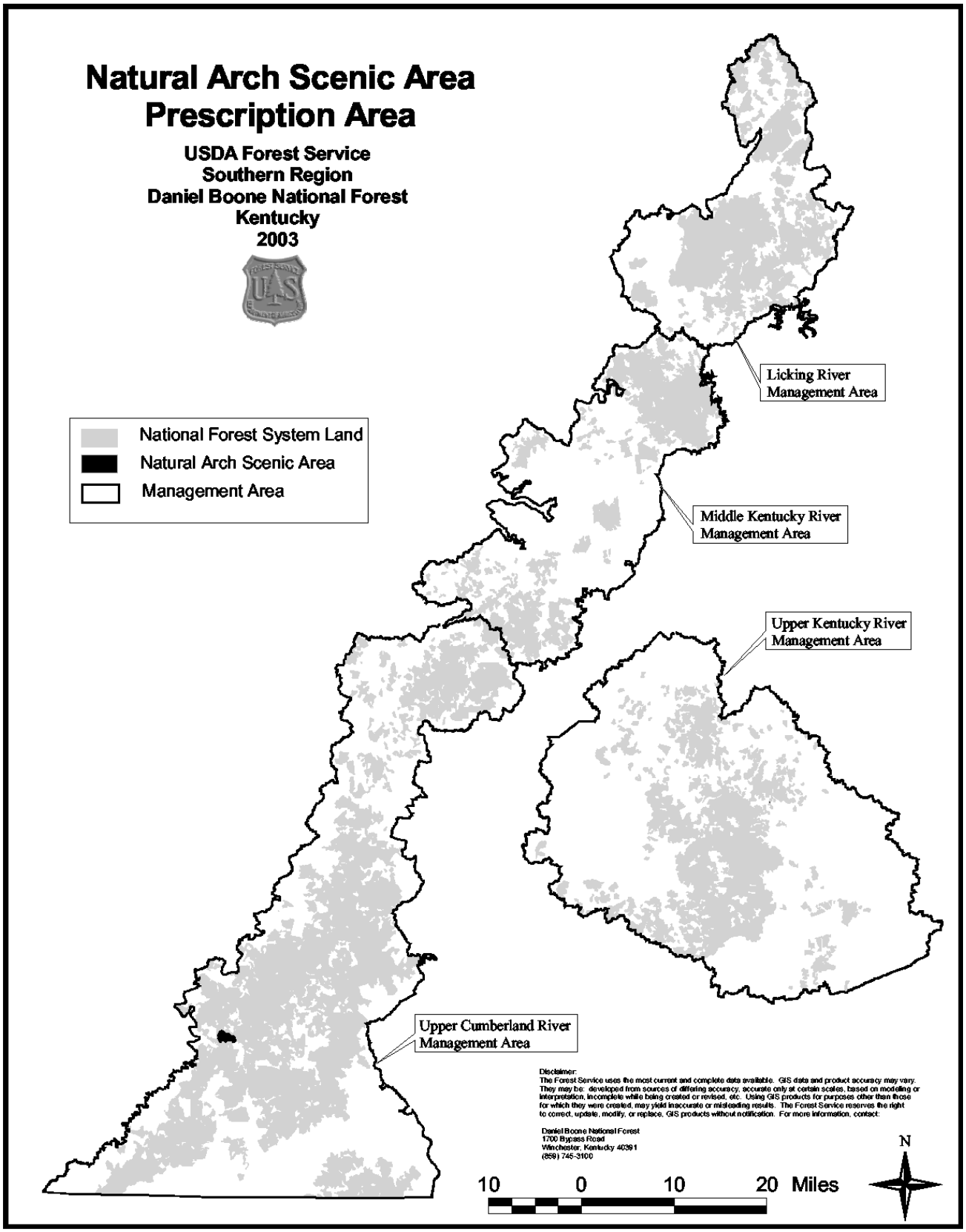


Figure G - 14. Natural Arch Scenic Area.

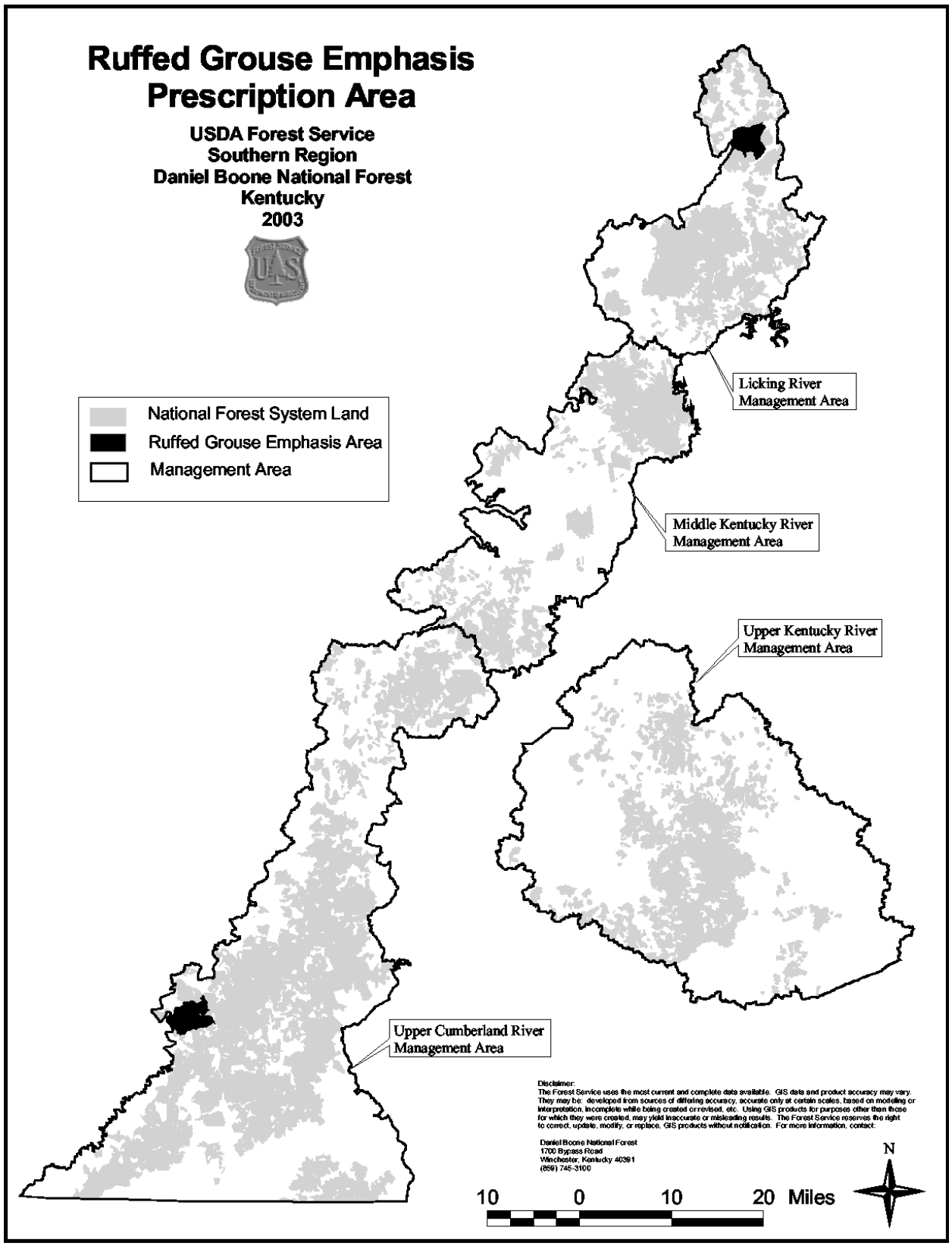


Figure G - 15. Ruffed Grouse Emphasis.

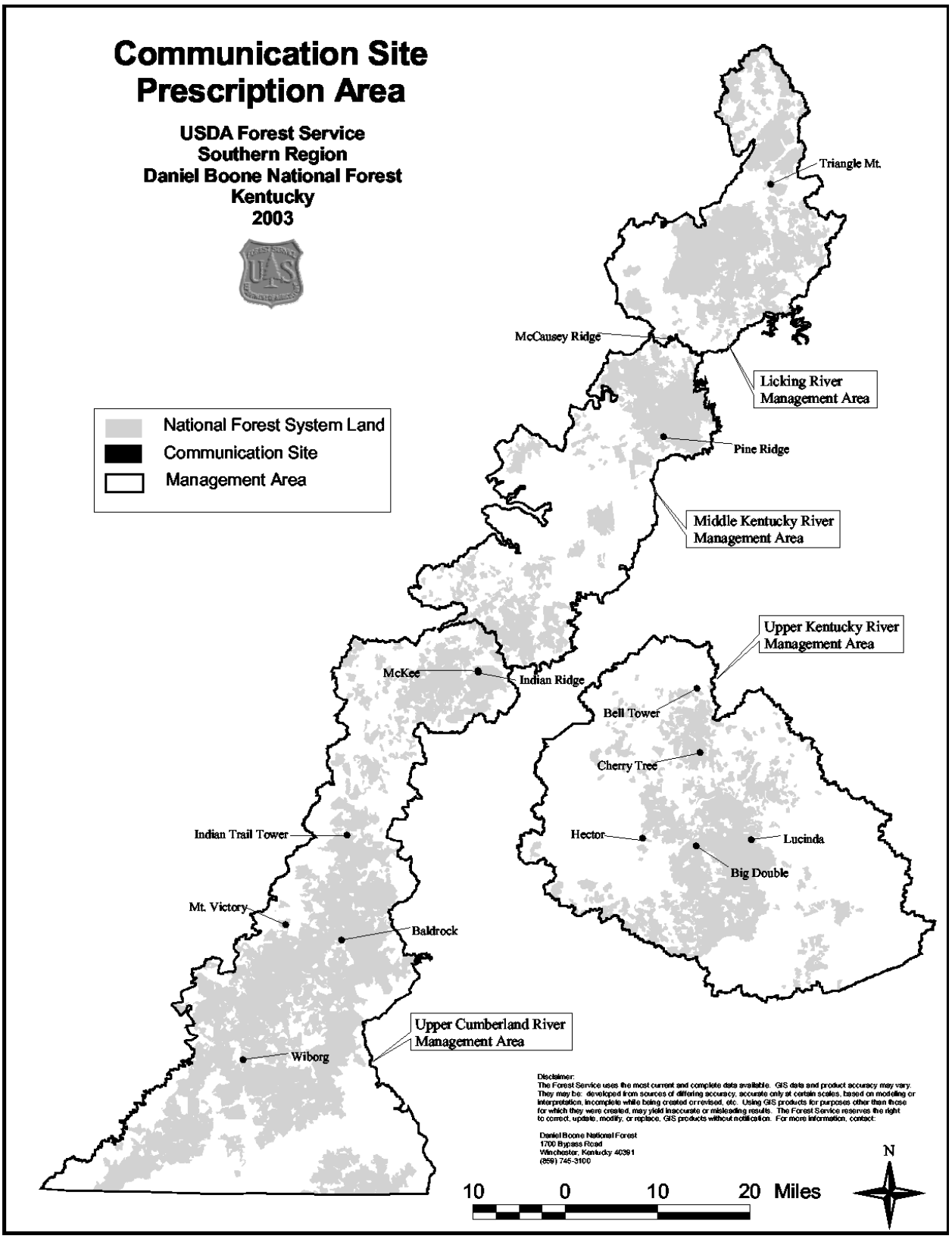


Figure G - 16. Communications Sites.

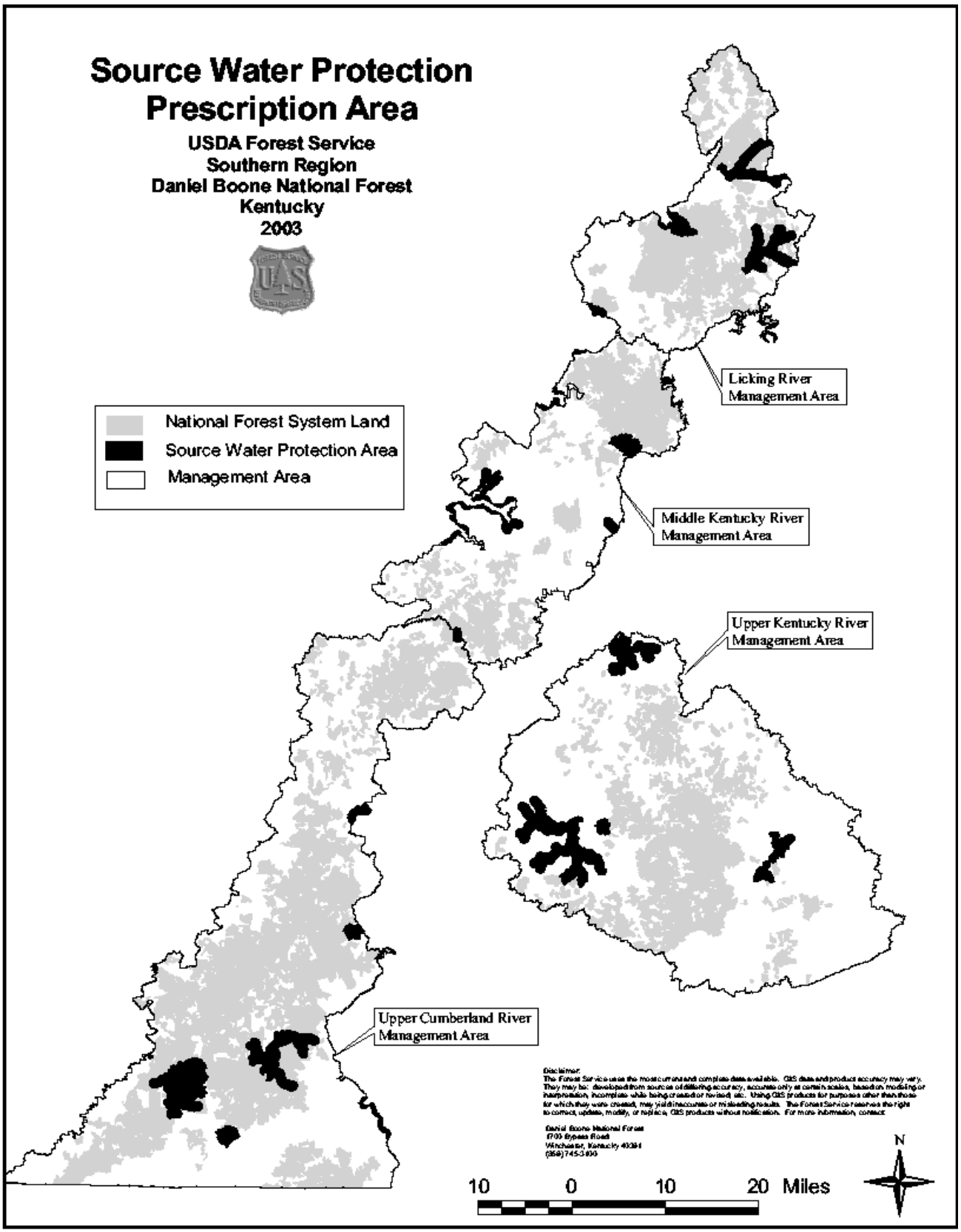


Figure G - 17. Source Water Protection.

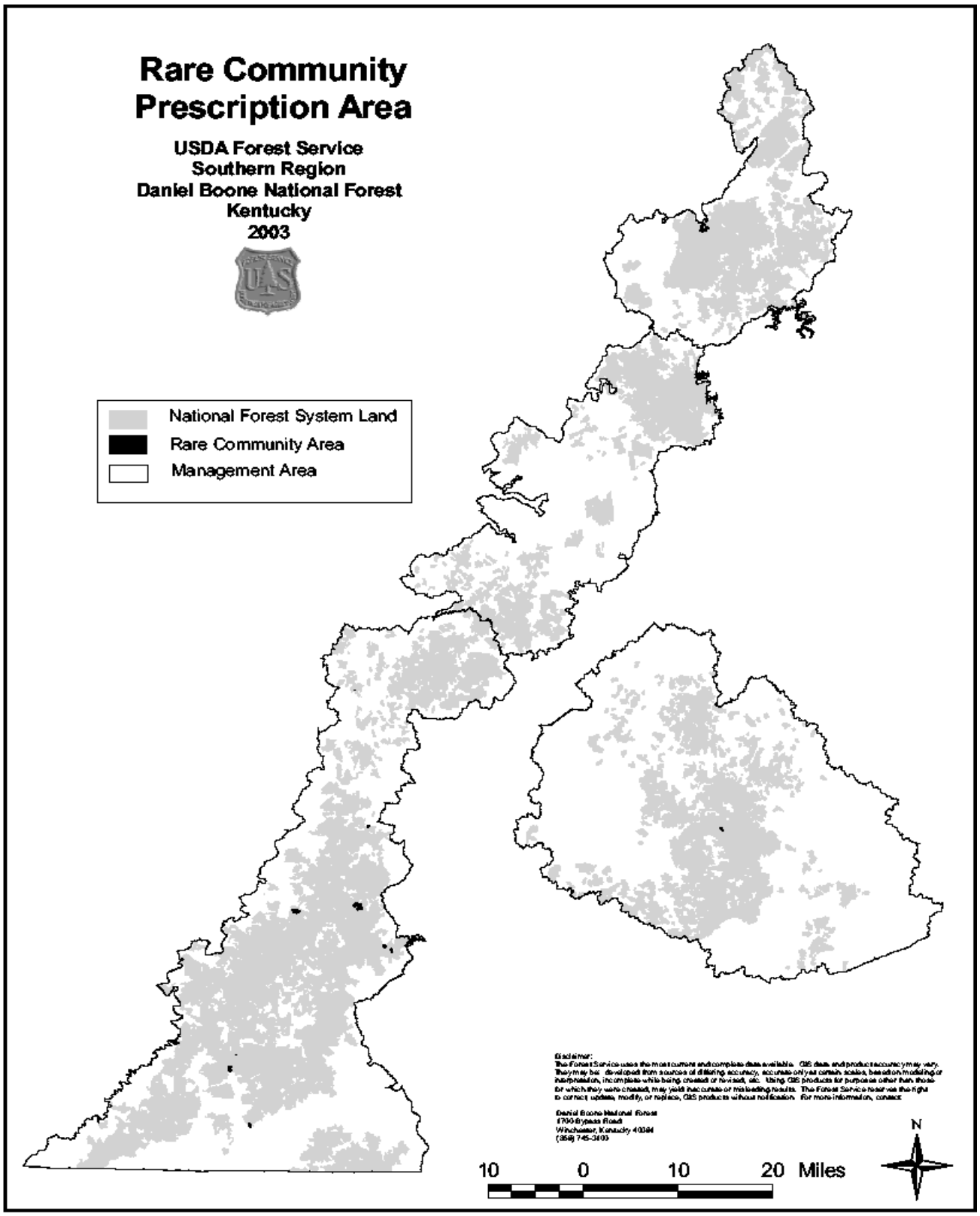


Figure G - 18 Rare Community.

The Cumberland River winds through the southern portion of the Daniel Boone National Forest.

Appendix H

VEGETATION MANAGEMENT PRACTICES

This appendix describes the types of silvicultural systems, and associated harvest and reforestation methods and other vegetation management practices that may be chosen as individual projects are designed and implemented on the Forest. This information complies with CFR 219.15, which states, "The vegetation management practices chosen for each vegetation type and circumstance shall be defined in the forest plan with applicable standards and guidelines and the reasons for the choices." Vegetation types are described in five groups each having similar characteristics. All the circumstances that could exist throughout the Forest are extremely complex and variable and are generally grouped in forestwide and prescription area management direction. Specific vegetation conditions and circumstances will be addressed at the project level as needed. All Forest Plan standards that place limitations or restrictions on vegetation management apply to the vegetation management practices described in this Appendix.

SILVICULTURAL SYSTEMS AND METHODS

Silviculture is defined as the theory and practice, art and science of controlling the establishment, composition, growth, and quality of forest stands and trees, to meet the objectives of management (Smith 1962, p.1).

A silvicultural system is a planned series of treatments for tending, harvesting, and re-establishing a stand (Helms 1998). Within a silvicultural system, treatments are categorized as being regeneration cuttings and/or treatments, or intermediate cuttings and/or treatments. A regeneration cutting is defined as any removal of trees intended to assist regeneration already present or to make regeneration possible. An intermediate cutting/treatment is defined as any treatment or tending designed to enhance growth, quality, vigor, and composition of the stand after establishment or regeneration and prior to final harvest (Helms 1998).

Any of the methods and treatments described in this appendix may be used in any management prescription area where vegetation management is needed, regardless of whether the lands are suitable for timber production. However, a planned cycle of treatments does not occur on unsuitable timberlands. Actual treatment choices will be decided on a site-specific project basis.

Silvicultural Systems and Associated Harvest Methods:

Even-aged Silvicultural System: On the Daniel Boone, this system may be primarily used to replace stands of heavily damaged or otherwise undesirable trees. Harvest methods and site preparation within this system would leave reserve trees (residual trees from the previous stand) to meet standards for protection of the Indiana bat. The reserve trees would not be expected to put on significant growth or survive for an extended period of time, and the stand would eventually develop into an even-aged condition.

1. **Shelterwood** – Shelter and shade would be provided for a new age-class developing in a moderated microenvironment for a short period of time. Most of the shelterwood trees would be removed during one or more entries. In most cases, reserve trees and snags would be left for wildlife habitat.
2. **Seed tree** - Seed trees would provide a seed source for a short period of time until adequate regeneration is established. The seed trees may then be removed. In most cases, reserve trees and snags would be left for wildlife habitat.
3. **Clearcutting** – Essentially all woody plants would be cut (some harvested, some left) leaving a fully exposed microclimate for the development of a new age class. In most cases, reserve trees and snags would be left for wildlife habitat.

Two-aged silvicultural system: This system is likely to be the most commonly applied on suitable timberland. The reserve trees left in this system would be expected to grow and survive to the end of the next harvest entry, so that two cohorts (each having trees of similar age) would be present at all times. Data for growth and yield of two-aged stands is still being collected, but 20-year observations indicate that where the residual overstory is low, understory development is similar to that in clearcuts (Beck 1986).

1. **Shelterwood with reserves** - Shelter and shade would be provided for a new age-class developing in a moderated microenvironment. The shelterwood trees would be left to develop beyond physiological maturity through the "second" rotation. If available, certain reserve trees would be left for Indiana bat. Artificial regeneration may be used to initiate or supplement the development of the younger cohort.
2. **Seed tree with reserves** – reserves would provide both long-term structure as well as an initial seed source. Stand development would proceed in a similar manner as in the shelterwood with reserves method; however, initiation of the younger cohort would be from the seed trees.

Thinning: This intermediate treatment may be used in both the even-aged system and the two-aged system. It may be used to improve the vigor of trees, so they would be better able to resist the impact of natural agents such as insects and disease; or to influence growth of understory habitat. As in the past, timber sales having a significant amount of thinning may receive few bids if markets for small roundwood do not improve. Therefore, thinnings may be either commercial or non-commercial. Non-commercial thinnings will leave more woody material on the forest floor, which would become available for fire fuels during the period of time before decomposition.

Uneven-aged silvicultural system: Although not limited from use in any area where harvest is appropriate, this system is specifically prescribed within a small portion of the 1E Riparian Prescription Area. Three or more cohorts would be present, as a result of regeneration being initiated at various times as a result of repeated free thinning. A "reverse J" shape distribution should eventually develop in the stand, where the stand would contain a much smaller regeneration, a moderate amount of medium-size trees, and a small amount of large older trees.

1. **Singletree selection** - Canopy gaps may be created where individual trees are removed.
2. **Group selection** - Canopy gaps should be approximately twice the height of mature trees with smaller openings providing microenvironments suitable for shade tolerant regeneration and larger openings providing conditions suitable for more shade intolerant regeneration (generally less than ¼ acre for most stands).

Size of harvest areas: The maximum size of even-aged and two-aged regeneration areas is limited by forestwide standard to 40 acres. Intermediate treatment area or uneven-aged regeneration area maximum size is not limited. Any of the above methods may be spatially applied to areas smaller than stand size[2]. Although not specifically prescribed, cuttings in areas smaller than stand size and larger than group-selection openings may be useful to meet site-specific habitat needs.

Site Preparation and Reforestation methods: All chemical, fire, manual, and mechanical site preparation methods are available for use on the Forest, with a few limitations imposed by forestwide or prescription area standards.

Although mechanical site preparation methods have not been used widely in recent years on the Forest, use of this method is expected in reforestation of stands destroyed by the southern pine beetle. Constraints are placed on mechanical methods such as piling and windrowing, to minimize soil displacement.

In most cases, no site preparation treatments will be needed for uneven-aged systems, although fire or herbicide may be used to stimulate and/or control composition of regeneration and control weeds.

SILVICULTURE BY VEGETATION TYPE AND CIRCUMSTANCE

Silviculture in Steep and Mountainous Areas: From past experience, cable logging systems have proven to be unacceptable in single-tree selection or thinning harvests where a large number of residual trees remain, since much damage is done to the residual trees during log skidding. However, in most situations on the steep soils of the Forest, an adequate residual should be left to help prevent mass slumping and excessive erosion. Methods such as group selection, or small (less than one acre) strip clearcuts or small two-aged openings, may be appropriate for cable yarding or bench skidding on these sites.

Mechanical site preparation methods are not used frequently in the Southern Appalachian Mountains because areas of sustained gentle slopes are small and widely dispersed (USDA Forest Service 1989, p. 49-50). Not only is operation of the equipment difficult and often unsafe, mechanical site preparation methods that heavily disturb soil resources are not suitable on steep slopes where soil loss can occur. Manual and/or chemical site preparation methods may be appropriate and the only option for these sites.

Silviculture in Dry-Xeric and Dry-Mesic Oak-Hickory types on the Daniel Boone National Forest: The oak-hickory forest type is the most common and has been the most commonly regenerated type on the Forest. Both the clearcut and the shelterwood methods have proven to be effective in regeneration of the oak-hickory types on the Forest[3]. The two-aged system, using the shelterwood with reserve method has also proven to be effective in regenerating a new cohort of trees, although unacceptable mortality has occurred to the residual in some stands, possibly due to drought conditions which occurred following treatment. The uneven-aged system has not been used for regeneration of the oak-hickory type on the Forest for many years, although the uneven-aged system was added to the Plan by amendment in July 2000. This system is showing promising results in dry oak forests in Arkansas (Loewenstein 2000). It could be prescribed for this forest type to

[2]A stand contains trees of uniform composition and structure, in a contiguous area that is practical to map, typically at least 5 acres in size.

[3]Hardwood Stocking Surveys show that stands have been reforested within 5 years. Stand inventory records show young stands as being adequately stocked.

achieve habitat objectives, although a conservative approach should be taken until managers become comfortable with the application and results of the methods. The seed tree method is not a viable alternative in regenerating this type (SAF 1981). Since most reproduction in this type is from sprouts, seed existing in the duff, and advanced regeneration, the seed trees are normally of little value in reproduction.

Any site preparation method or combination of methods could be appropriate in this type, although timing and intensity of prescribed fire is probably a key factor in oak reproduction. On the Daniel Boone National Forest, without fire on these upland sites, dogwood, red maple, blackgum, and shrubs often dominate young stands. Regardless of harvest or site prep method, without repeated fire and advanced oak regeneration, the percentage of oak component is often reduced in the resulting stand. A "shelterwood-burn" technique could be used to assure a new oak forest. Burning could continue for several years following an initial light shelterwood harvest, until oak dominates the advance regeneration pool (Van Lear et al. 2000). Continued short-return fire would cause the development of oak savanna. Therefore if oak-hickory forest is the desired condition, following the development of a dominance of oak regeneration, fire (and other disturbance) should be excluded for several years to allow growth of bark for protection of the cambium layer of young trees.

Silviculture in Yellow pine and Yellow pine-hardwood types on the Daniel Boone National Forest: Yellow pine and yellow pine-hardwood forest types have declined in recent years and much regeneration of this type is planned. In the even-aged system, both the clearcut and the seed-tree methods have proven to be effective in regeneration of these types on the Forest[4]. When pine seed-trees are available, the two-aged system, using the seed-tree with reserves method has also proven to be effective in regenerating a new cohort of pine when seedbed and moisture conditions are favorable. Although yellow pine is well adapted to fire, occasional mortality can occur to the seed-trees if the site preparation fire becomes too intense. A two-aged system using a shelterwood with reserves may also be used which would result in an older hardwood residual over a younger planted pine/natural hardwood cohort. There are no records of an uneven-aged system having been used for regeneration of yellow pine or yellow pine-hardwood types on the Forest. It has generally been thought that shade-intolerant pine regeneration would not compete well in a shady uneven-aged condition. However in a study on the Ouachita National Forest, shortleaf pine was successfully regenerated and grown in uneven-aged condition developed using singletree selection (Shelton & Murphy, 1997). The study concluded that the system works best when the overstory is kept open, and higher proportions of pine are maintained. "Hardwoods apparently suppress the development of pine seedlings to a greater degree than do an equivalent basal area of pines." On the Daniel Boone an uneven-aged system could be prescribed for these forest types to achieve habitat objectives, although a conservative approach should be taken until managers become comfortable with the method application and results.

Any site preparation method or combination of methods could be appropriate in these types. However, control of competition with herbicides, and timing of prescribed fire are key factors in survival and growth of the planted pines. Although survival and growth of shortleaf and pitch pine will be the major focus in these types, some advanced oak regeneration is desirable, so pre-harvest burning would favor an oak component. As in the oak-hickory forest, without fire, dogwood, red maple, blackgum, and shrubs often dominate young stands on these upland sites. Also, as in any

[4]Plantation Evaluation Performance reports show that stands have been reforested within 5 years. Stand inventory records show young stands as being adequately stocked.

forest type, once the young cohort is established, fire (and other disturbance) should be excluded for several years to allow growth of bark for protection of the cambium layer of young trees. In Arkansas "evidently 5-6 year old shortleaf pine regeneration is surviving cool winter burns.[5]" However, when burning at other times of the year, pine stands should be nearer to age 10.

Silviculture in Oak-Pine types on the Daniel Boone National Forest: These types are basically a transition between the two forest type groups described above. Silvicultural systems and site preparation methods would be the same. The method selected for an individual project would depend on which component (oak, or yellow pine) needed the greatest emphasis. In the past, these stands would be managed using natural regeneration in a fire-mediated system as in the dry-mesic or dry-xeric oak types. Pines would seed in from adjacent stands, often from higher ridges above. However, due to the lack of pine seed source, artificial regeneration of pine will most likely be prescribed, especially if in the dry-xeric conditions. Some of these stands that were formerly oak-pine types on mesic sites, that have lost the pine component, will most likely be allowed to develop as oak-hickory types.

Silviculture in Mixed Mesophytic types on the Daniel Boone National Forest: The clearcutting and the shelterwood method have proven to be effective in regeneration of the mixed mesophytic types on the Forest[6]. With the right conditions, the seed tree method may also be successful in regenerating some of the light-seeded tree species such as yellow-poplar, within this type. However, in this Plan, much of this type is in the Riparian-Aquatic Area, which may be moving toward an old-growth condition. A small portion of the area is planned to have a routinely disturbed uneven-aged condition having much growth concentrated in the understory. Uneven-aged systems generally favor shade-tolerant species. In the mixed mesophytic type, species such as American beech, American basswood, and sugar maple would be favored. Very little yellow-poplar or walnut regeneration would be expected in the shady understory. If a seed source is present, a minor component of white pine and/or hemlock could become established. If the overstory is kept low, ash, and other intermediate shade tolerant species could emerge.

Since higher moisture conditions on these sites typically limit the use of fire as a site preparation tool, oak and pine regeneration is normally limited. High moisture conditions also limit the use of mechanical site preparation methods. A combination of manual and limited chemical site preparation methods will likely be the most appropriate applied method in this type. On these highly productive sites, a combination of overstory thinning and herbicide may be used within 10 years of final harvest to stimulate advanced oak regeneration (Loftis, 1990). In these highly productive (high growth) areas, shrub and vine species may need to be controlled using combinations of manual and herbicide methods in order to allow timely forest regeneration.

[5]Personal communication with Jim Guldin, Professor, Univ. of Arkansas, Monticello, 10/20/1997.

[6]Hardwood Stocking Surveys show that stands have been reforested within 5 years. Stand inventory records show young stands as being adequately stocked.

Silviculture in White pine & Hemlock types on the Daniel Boone National Forest: The clearcutting and the shelterwood method have shown mixed results in the regeneration of the white pine and hemlock types on the Forest. Hardwoods and shrubs often out-compete softwoods in full sunlight on mesic sites where this type is most appropriate. However, where hardwood competition is minimal, even-aged regeneration of these species may occur. The seed tree method could also be successful in regenerating white pine, if competition is controlled. However in this Plan, much of this type is in the Riparian-Aquatic Area, and will be moving toward an old-growth condition. A small portion of the area is planned as having a routinely disturbed uneven-aged condition having much growth concentrated in the understory. Uneven-aged systems generally favor both of these shade-tolerant softwood species. The hardwood component of these types, if any would respond as in the mixed mesophytic type above.

Since higher moisture conditions on these sites typically limit the use of fire as a site preparation tool, oak and pine regeneration is normally limited. High moisture conditions also limit the use of mechanical site preparation methods. Some herbicide use may be appropriate in non-riparian areas, however manual site preparation methods will likely be the most appropriate applied method in this type. In these highly productive areas, shrub and vine species may need to be controlled using combinations of manual and herbicide methods in order to allow softwood regeneration.

SUMMARY OF VEGETATION MANAGEMENT PRACTICES

When management alters vegetation, the methods, timing, and intensity of the practices determine the level of benefits that can be obtained from the affected resources. It is not practical to attempt to describe all the conditions and reasons for manipulating vegetative conditions. Reasons range from improving forest health to eliminating hazards for public safety. Site-specific implementation of the forest plan is the appropriate place for determining which management practice(s) to use for achieving a specific project objective. Table H - 1 identifies, by forest type group, the management practices that are effective treatment methods for the vegetation types on the Daniel Boone National Forest.

Table H - 1. Vegetation management practices on the Daniel Boone National Forest, by forest type group and two non-forest conditions

Vegetation Management Practice Description	Dry Xeric & Dry –Mesic Oak-Hickory	Yellow Pine & Yellow Pine-Hardwood	Oak-Pine	Mixed Mesophytic	White Pine & Hemlock	Grass-Shrub Opening	Road & Utility Right of Ways
Even-aged systems							
Shelterwood	X	X	X	X	X		
Clearcut	X	X	X	X	X		
Seed Tree		X	X		X		
Two-aged systems							
Shelterwood w. Reserves	X	X	X	X	X		
Seed Tree w. Reserves		X	X		X		
Uneven-aged systems							
Singletree selection	X	X	X	X	X		
Group selection	X	X	X	X	X		
Intermediate Treatments							
Thinning	X	X	X	X	X		
Pruning	X	X	X	X	X		
Seeding	X	X	X	X	X	X	X
Planting trees	X	X	X	X	X		X
Sanitation/Cleaning	X	X	X	X	X		
Salvage	X	X	X	X	X		
Prescribed fire	X	X	X	X	X	X	X
Mechanical Piling		X	X			X	
Mechanical Ripping		X	X				X
Mechanical Shearing							
Mechanical Grinding	X	X	X	X	X		X
Mechanical Chopping	X	X	X	X	X		X
Mechanical Scarifying		X	X				
Mechanical Mowing						X	X
Mechanical Disking		X	X			X	X
Herbicide Aerial Liquid	X	X	X	X	X	X	X
Herbicide Aerial Granular	X	X	X	X	X	X	X
Herbicide Mechanical Liquid	X	X	X	X	X	X	X
Herbicide Mechanical Granular	X	X	X	X	X	X	X
Herbicide Manual Granular	X	X	X	X	X	X	X
Herbicide Foliar Broadcast	X	X	X	X	X	X	X
Herbicide Basal	X	X	X	X	X	X	X
Herbicide Soil Spot	X	X	X	X	X	X	X
Herbicide Cut-Surface	X	X	X	X	X	X	X

“X” indicates that vegetation practice is effective.

Snow on the hemlocks, Stearns Ranger District.

Appendix I

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A fawn enjoys springtime on the Daniel Boone National Forest.

Fishing on Cave Run Lake, Morehead Ranger District.